FEBRUARY 6, 1954 PAGES 271 TO 322

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2
Telegrams: LANCET, RAND, LONDON **Telephone:** TEMPLE BAR 7228 and 7229

No. VI OF VOL. I, 1954
No. 6806 VOL. CCLXVI

LONDON, SATURDAY, FEBRUARY 6, 1954
Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper

Pp. 112—Price 1s.
Annual Subscription: £2 2s.

LIBRARY OF CONGRESS EXTERNAL RECORDS
FEB 23 1954

Reliable Anticoagulants

PULARIN and DINDEVAN

EVANS MEDICAL SUPPLIES LTD · LIVERPOOL & LONDON

THE LAW AND ETHICS OF DENTAL PRACTICE
By R. W. DURAND, M.R.C.S., L.R.C.P.
Formerly Secretary of the Medical Protection Society
and
D. MORGAN, L.D.S. (Leeds)
Formerly Deputy Dental Secretary of the British Dental Association
Foreword by Professor R. V. BRADLAW, M.D.S., Dunelm, F.D.S., M.R.C.S. Eng.
Professor of Oral Pathology, Durham University
Director, Newcastle-upon-Tyne Dental School

Expert guidance on the many problems which confront the dentist

Demy 8vo 98 + viii Price 7s. 6d. net, plus 4d. postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

Second Edition
THE CARE OF TUBERCULOSIS IN THE HOME
By JAMES MAXWELL, M.D., F.R.C.P.
Physician, Royal Chest Hospital; Physician to the Ministry's Mass X-ray Unit; Consulting Physician, Royal National Sanatorium, Bournemouth; late Physician, St. Bartholomew's Hospital
Demy 8vo 114 + xii Illustrations 7s. 6d. net, plus 4d. postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

DISABILITIES AND HOW TO LIVE WITH THEM
by 55 Patients
Demy 8vo 252 pages Price 10s. 6d. net, plus 6d. postage

". . . it ought, we believe, to be made the compulsory reading of every medical student. It would enrich his humanity and add immensely to his subsequent value as a doctor."—*Medical Press.*
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

FANCONI & WALLGREN'S
TEXTBOOK OF PÆDIATRICS
English Edition edited by W. R. F. COLLIS, M.A., M.D., F.R.C.P., F.R.C.P.I., D.P.H.
Translated from the German by E. KAWERAU, M.B., M.Sc., A.R.I.C.

Eight-page, illustrated brochure available upon request.
1124 pages 440 illustrations 19 colour plates £7 7s. net
Wm. Heinemann Medical Books Ltd., Gt. Russell-street, W.C.1

TECHNIQUES IN PHYSIOTHERAPY
Edited by
F. L. GREENHILL, S.R.N., M.C.S.P., T.H.T.
Sister-in-Charge, Medical Rehabilitation Unit, Royal Free Hospital; Late Sister-in-Charge, Rehabilitation Unit, Hill End E.M.S. Hospital (St. Bartholomew's); Former Member Council of Chartered Society of Physiotherapy.
Assisted by
C. B. HEALD, C.B.E., M.D., F.R.C.P., in Rheumatism and Arthritis.
J. N. BARRON, F.R.C.S., in Burns and Injuries of the Hand.
Mr. J. COLSON, M.C.S.P., M.A.O.T., Occupational Therapy in Medicine and Surgery.
Demy 8vo Pages 222 + x 8 plates 34 figures
12s. 6d. net, plus 7d. postage.
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

Second Edition
SURGERY: A TEXTBOOK FOR STUDENTS
By CHARLES AUBREY PANNETT, B.Sc., M.D., F.R.C.S.
Professor of Surgery, University of London; Director of the Surgical Unit, St. Mary's Hospital, London; sometime member of the Court of Examiners, R.C.S. Eng., and Examiner to the Universities of London, Manchester, and Cardiff.
769 + xiv Price 27s. 6d. net, plus 1s. postage
Extensively illustrated throughout text
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

THE EXTRA PHARMACOPŒIA
(MARTINDALE)
Volume I, 23rd edition

This new edition, completely re-written, provides up-to-date information on the thousand and one drugs used in medical practice. It supplies the most complete guide available to "ethical" proprietaries and has special sections on antibiotics, anti-sera and vaccines, and blood transfusion.

For the first time it incorporates "Squire's Companion." The book has been entirely reset with a larger page size and more pages than any previous edition, but retains its original handy format.

Pp. xxii + 1352 **Price 55s.** **(Postage 1s.)**

Remittance with order is requested

THE PHARMACEUTICAL PRESS, 17, Bloomsbury Square, London, W.C.1
(Publishers of the British Pharmaceutical Codex)

"In a Dangerous illness call in Three Doctors"

An **M&B** *brand Medical Product*

'SULPHATRIAD'

trade mark *brand*

COMPOUND SULPHONAMIDES

Supplied as 0·5 Gm. tablets, and as a fruit-flavoured suspension. Each tablet and 3·6 c.c. (approx. 1 teaspoonful) of suspension contain 0·185 Gm. sulphathiazole, 0·185 Gm. sulphadiazine, and 0·13 Gm. sulphamerazine.

Drug Tariff Basic Costs for dispensing packs 24 tablets, and 2 fl. oz. suspension ... 2s. 3d.

The old Chinese proverb implies safety in numbers, an implication that is fully supported in modern medical practice by the use of 'Sulphatriad' brand compound sulphonamides.

But safety in treatment is not the only criterion by which 'Sulphatriad' should be judged. The sulphonamides which are associated in this preparation are three of the most active in general use. 'Sulphatriad' has been *clinically* proven and is now widely accepted as the sulphonamide preparation combining rapid absorption, good tissue distribution and fast therapeutic effect with a high degree of safety.

Detailed literature available on request.

MANUFACTURED BY M&B **MAY & BAKER LTD**

MA1347

DISTRIBUTORS: PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM

FEB. 6, 1954 PAGES 271 TO 322

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6806 . LONDON: SATURDAY, FEBRUARY 6, 1954 CCLXVI

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Chronic Bronchitis — NEVILLE C. OSWALD, F.R.C.P. 271
Pathology of Chronic Bronchitis — LYNNE McA. REID, M.R.C.P. 275
Bilateral Hilar Lymphadenopathy — N. WYNN-WILLIAMS, M.B. G. F. EDWARDS, M.R.C.P.... 278
Thrombosis of the Portal Vein in Cirrhosis Hepatis — A. H. HUNT, F.R.C.S. B. R. WHITTARD, M.B..... 281
Blood Dyscrasias Associated with Chloramphenicol — ROBERT HODGKINSON, M.B. 285
Acquired Toxoplasmosis — ERIC SKIPPER, F.R.C.P. J. K. A. BEVERLEY, M.B. Prof. C. P. BEATTIE, M.B.... 287
Limitation of Vital Capacity — A. C. DORNHORST, M.R.C.P. H. B. KELLY, M.R.C.P..... 290
Air-conditioning with Filtered Air for Dressing Burns — E. J. L. LOWBURY, B.M..... 292

SPECIAL ARTICLES

The Aged Sick — W. L. GRAHAM..... 304
Arts of Administration..... 305

MEDICAL SOCIETIES

Manchester Medical Society: Brucellosis..... 294

REVIEWS

Notices of Books..... 295

PARLIAMENT

Mass Medication..... 308
New Abortion Bill..... 309
Recruitment of Nurses..... 309
Question Time..... 309

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents... 309

MEDICINE AND THE LAW

Doctor Protected as a Public Authority..... 318

LEADING ARTICLES

AGE AND MATERNITY..... 297
LOCAL ANTIBIOTICS FOR BURNS.. 298
COMBINED PROPHYLACTICS..... 299
TOXOPLASMOSIS..... 299

ANNOTATIONS

Hospital Statistics..... 300
The Anatomy of Facial Palsy.... 301
Human Biochemical Genetics... 301
"Smoker's Cough"..... 302
Umbilical Hernia in Infants.... 303
Water Intoxication in Closed-circuit Anæsthesia..... 303
The Life of Barcroft..... 303

MANAGEMENT OF BURNS

VI. Restoration of Full Function 306

LETTERS TO THE EDITOR

Is Your Tonsillectomy Really Necessary? (Mr. N. A. Punt, F.R.C.S.E.)..... 310
Observer Error (Dr. Douglas Hubble)..... 310
Policy for "Prematures" (Dr. G. I. Brodie)..... 311
Postural Ischæmia and Blood-pressure (Dr. Gough Hughes; Dr. G. L. Leathart)..... 311
The Maladjusted School (Dr. Mary Burbury)..... 312
College of General Practitioners (Dr. G. F. Abercrombie, Dr. H. L. Glyn Hughes, Dr. J. H. Hunt)..... 312
Certificates (Dr. I. M. Jones).... 312
British Psychiatry (Dr. J. P. Crawford)..... 313
Salaries of Whole-time Specialists (Dr. D. Stark Murray)..... 313
Cortisone Desensitisation (Dr. G. E. Loxton, Mr. David Le Vay, F.R.C.S.)..... 313
Training of Nurses (Dr. L. Findlay)..... 314
Estimation of Plasma-insulin (Dr. John Edwards)..... 314
Medicine and the Welfare State (Dr. Raymond Gavin)..... 315
Bronchial Neoplasm with Myasthenia (Dr. V. M. Borrelli, Dr. Harry Keen; Dr. E. W. Prosser Thomas)..... 315
Cortisone in Bell's Palsy (Dr. W. Hamilton Smith)..... 316
The Insulin Myth (Prof. Tibor Lehoczky, Dr. Margaret Lehoczky)..... 316
On Credulity (Dr. L. J. Bendit).. 317
The Simple Ganglion (Mr. C. Patrick Sames, F.R.C.S.)..... 317
Urethral Apoplexy (Mr. D. H. Randall, F.R.C.S.)..... 317
Shortage of Mental Nurses (Dr. L. C. Cook)..... 317

PUBLIC HEALTH

Estimate of Births..... 318
Eire in the Third Quarter..... 318

OBITUARY

Donald Sage Sutherland..... 318

NOTES AND NEWS

Fundamental Research..... 319
A.C.S. at R.C.S..... 319
World Health Organisation..... 319
Blood Dyscrasia Due to Chloramphenicol..... 319
Design and Function..... 319
Part-time Medical Officers' Salaries..... 320
British Journal of Anæsthesia.... 320
Zoonoses..... 320
Getting Warmer..... 320
Nutrition in South and East Asia 320

University of Oxford..... 320
University of Cambridge..... 320
Royal College of Surgeons of England..... 320
Royal College of Physicians of London..... 321
Royal College of Obstetricians and Gynæcologists..... 321

Diary of the Week..... 322
Appointments..... 322
Births, Marriages, and Deaths... 322

convenient in use . . .

'STREPTAQUAINE' Solution

brand

a stabilised solution of streptomycin sulphate ready for injection

. . . costs the same as streptomycin

Distributed by:

ALLEN & HANBURYS LTD. BRITISH DRUG HOUSES LTD. BURROUGHS WELLCOME & CO. EVANS MEDICAL SUPPLIES LTD. IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD. PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD.

Manufactured by:

THE DISTILLERS COMPANY (BIOCHEMICALS) LIMITED

Owners of the trademark 'Streptaquaine'

63/83

Inadequate Nutrition in Elderly Patients

Old people living on a restricted income often exist on an inadequate diet, and amongst the nutrients that have been found to be lacking in such diets are vitamins of the B_2 complex.

Marmite yeast extract is a useful source of these vitamins that can readily be taken by elderly patients, who seem to appreciate its piquant flavour. It supplies riboflavin, nicotinic acid, folic acid, pyridoxin, pantothenic acid, biotin, choline, inositol and *p*-aminobenzoic acid.

MARMITE
yeast extract
1-oz. 9d., 2-oz. 1/4, 4-oz. 2/4, 8-oz. 4/-, 16-oz. 7/-
Obtainable from chemists and grocers
Special terms for packs for hospitals, welfare centres and schools.
Literature on request
THE MARMITE FOOD EXTRACT CO., LTD.
8409 35, Seething Lane, London, E.C.3

Specify M&B brand

ETHER ANAESTHETIC B.P.

Manufactured in our own plant at Dagenham, this product is specially prepared, purified and stabilized for anaesthesia to Baker's specification. It is a product to specify and use with confidence.

Supplied in containers convenient for handling

DAGENHAM MAY & BAKER LTD ENGLAND

Telephone: ILFord 3060 Extension 220
ASSOCIATED HOUSES: BOMBAY · LAGOS · MONTREAL
PORT ELIZABETH · SYDNEY · WELLINGTON
Branches and Agents throughout the World

PHA264

'Avloprocil' AS
Trade Mark

Aqueous Suspension of Procaine Penicillin G

for convenience in everyday practice

* 'AVLOPROCIL' A.S. REQUIRES NO PRELIMINARY PREPARATION—IT IS ALWAYS READY FOR USE.
* EACH C.C. CONTAINS 300,000 UNITS PROCAINE PENICILLIN G.
* A SINGLE DAILY 1 C.C. INJECTION IS EFFECTIVE AGAINST THE MAJORITY OF INFECTIONS CAUSED BY PENICILLIN-SENSITIVE ORGANISMS.

Now available in Silicone-treated vials containing 10 x 1 c.c. doses
Basic price under N.H.S. 6/11d.

ICI

IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD.
A subsidiary company of Imperial Chemical Industries Ltd.
WILMSLOW, MANCHESTER
Ph.414/1

HENRY KIMPTON'S PUBLICATIONS

New (2nd) Edition — Just Ready

PHYSIOLOGY OF THE EYE

By **FRANCIS HEED ADLER**, M.A., M.D., F.A.C.S.

SECOND EDITION, REVISED

Royal Octavo — 734 Pages — 329 Illustrations, including 3 in Colour — Cloth — Price **97s. 6d.** net

New Book — Just Ready

CLINICAL DISORDERS OF THE HEART BEAT

By **SAMUEL BELLET**, M.D.

Large Octavo 373 Pages 164 Illustrations Cloth Price **63s.** net

New (2nd) Edition — Just Ready

A PRIMER OF CARDIOLOGY

By **GEORGE E. BURCH**, M.D., F.A.C.P.

SECOND EDITION, REVISED AND ENLARGED

Royal Octavo 339 Pages 214 Illustrations Cloth Price **42s.** net

New Book — Just Ready

SPATIAL VECTORCARDIOGRAPHY

By **GEORGE E. BURCH**, M.D., F.A.C.P.; **J. A. ABILDSKOV**, M.D.; and **JAMES A. CRONVICH**, M.S.

Royal Octavo 173 Pages 121 Illustrations Cloth Price **37s. 6d.** net (postage 8d.)

New (10th) Edition — Just Ready

DISEASES OF WOMEN

By **ROBERT JAMES CROSSEN**, A.B., M.D., F.A.C.S.

TENTH EDITION, REVISED

Large Octavo xiii + 935 Pages. 990 Illustrations, including 41 in Colour Cloth Price **£6 15s.** net

New (5th) Edition — Now Ready

SURGICAL TECHNIQUE

By **A. V. PARTIPILO**, M.D., F.A.C.S.

FIFTH EDITION, REVISED AND ENLARGED

Large Octavo 704 Pages Cloth 998 Illustrations on 548 Figures Price **£5 10s.** net

New Book — Just Ready

HYPERTENSIVE DISEASES

By **HENRY A. SCHROEDER**, M.D., F.A.C.P.

With Four Contributors

Royal Octavo 610 Pages 164 Illustrations and 3 Coloured Plates Cloth Price **75s.** net

New (6th) Edition — Now Ready

A TEXTBOOK OF PATHOLOGY

By **WILLIAM BOYD**, M.D., F.R.C.P. (Lond.), F.R.C.S. (Can.)

SIXTH EDITION, REVISED

Royal Octavo 1024 Pages 570 Illustrations, 32 Coloured Plates Cloth Price **88s.** net

25 Bloomsbury Way **HENRY KIMPTON** **London, W.C.1**

Medical Book Department of Hirschfeld Brothers Ltd.

KAYLENE-OL

(brand of colloidal kaolin B.P. and liquid paraffin)

in the treatment of Intestinal Toxæmia, Chronic Colitis and Spastic Constipation

In the Ministry of Health's comparative list Kaylene-ol is quoted at exactly the same price as the B.P. equivalent.

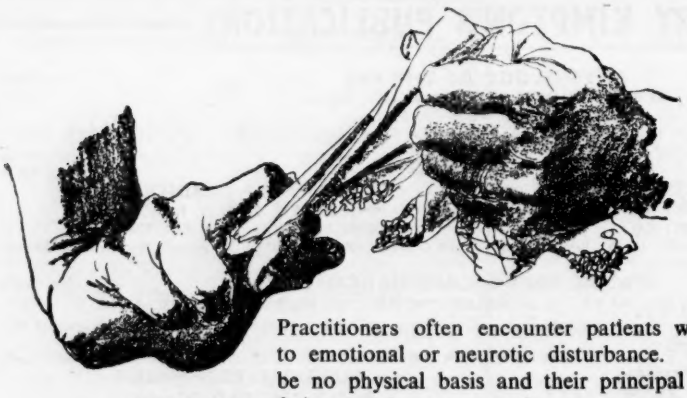
All the products of Kaylene (Chemicals) Limited are in Category 2 or Category 4 in the Ministry of Health's Classified List, and are therefore prescribable on Form E.C.10.

Samples and literature on request.

KAYLENE BRAND

KAYLENE (CHEMICALS) LIMITED

Sole Distributors: **ADSORBENTS, LTD.**, WATERLOO ROAD, LONDON, N.W.2



Nervous Exhaustion

Practitioners often encounter patients whose ill-health is due mainly to emotional or neurotic disturbance. Frequently there appears to be no physical basis and their principal symptoms are usually undue nervousness, fatigue and poor appetite.

For these mildly neurasthenic and exhausted cases 'BEPLETE' Wyeth is uniquely appropriate. It contains Phenobarbitone and Vitamin B-complex as an appetising Elixir, and so provides a quieting relaxation, while at the same time supplying nutritional factors known to be essential for the energy requirements of nervous metabolism.

'BEPLETE' contains:—
Phenobarbitone B.P. ¼gr.: Aneurine Hydrochloride 1.5 mg.: Riboflavin 1.0 mg.: Pyridoxine Hydrochloride 0.33 mg.: Nicotinamide B.P. 10.0 mg.: Pantothenyl Alcohol 0.2 mg. (equivalent to 0.212 mg. Pantothenic Acid): Alcohol 15%.

'Beplete'
Trade Mark

John Wyeth & Brother Limited, Clifton House, Euston Road, London, N.W.1. Wyeth

Introducing

A

PENICILLIN INHALATION SET

for Nasal and Oral Inhalation

EACH SET CONTAINS
ONE INHALATOR AND TWO VIALS EACH CONTAINING THREE CAPSULES 100,000 UNITS CRYSTALLINE PENICILLIN POTASSIUM SALT.

THE ARMOUR LABORATORIES
(ARMOUR & COMPANY LTD)

LINDSEY STREET, LONDON, E.C.1

Telephone: CLERKENWELL 9011
Telegrams: "ARMOSATA-PHONE" LONDON

MOTION SICKNESS

As a result of an evaluation* of a number of drugs, including other antihistaminics, for their ability to protect against motion sickness it was shown that the active constituent of Ancolan was 'the only compound that protected when given but once daily'.

* (*Journal of Pharmacology and Experimental Therapeutics, Dec. 1953, p. 376*).

Its advantages are—
LONG DURATION OF ACTION
EXCEPTIONALLY WELL TOLERATED

'ANCOLAN' TRADE MARK

Tablets containing 25 mg. mecloxine dihydrochloride

DOSAGE:
1 or 2 tablets 1 hour before commencement of journey

Basic N.H.S. prices:
Bottles of 25 tablets 3/8 and 250 at 32/6
Descriptive literature is available on request.

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

Ancl/E.541

BISMUTH*

THE BROAD SPECTRUM AGENT

IN SKIN DISORDERS

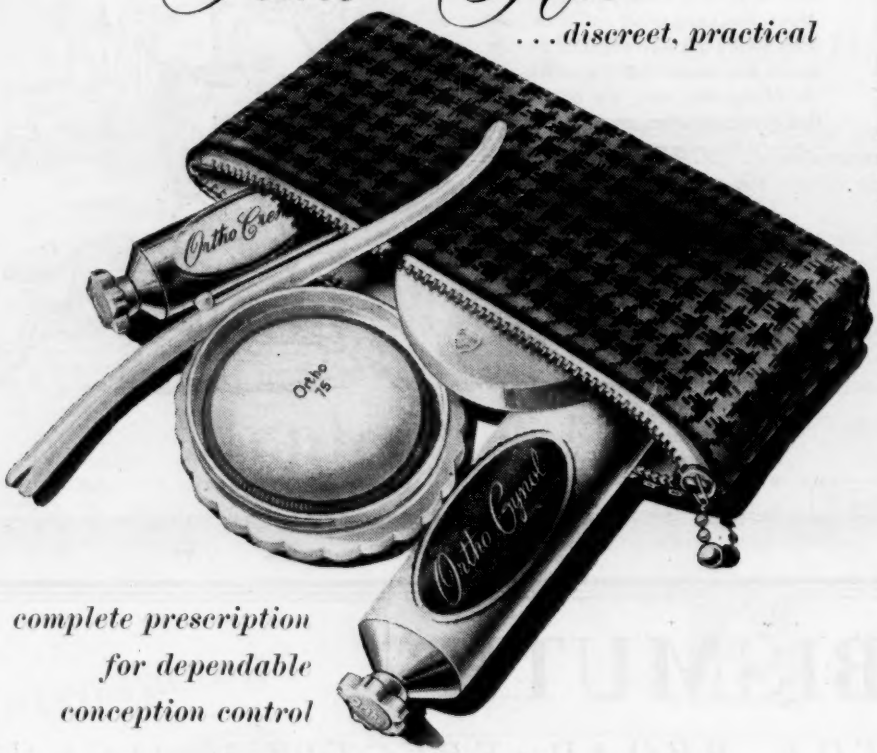
IN a paper published in *Practitioner* (1953) **171,** 549, an account is given of the unequalled value of Bismuth preparations in the treatment of skin disorders. The paper is the result of over 50 years' experience in which various Bismuth preparations have been found of value in over 25 skin conditions.

*
If you have not received a complimentary copy of "A Vademecum on Bismuth Therapy", covering the uses of Bismuth and its salts in gastroenterology, dermatology and various other conditions, please apply to

MINING & CHEMICAL PRODUCTS LIMITED
BISMUTH RESEARCH DEPT. 86 STRAND, LONDON, W.C.2

Ortho DE-LUXE Kit

. . . discreet, practical



complete prescription for dependable conception control

containing: **Ortho-Gynol** vaginal jelly
Ricinoleic acid and p-Diisobutylphenoxypolyethoxyethanol in a vegetable gum base buffered at pH. 4.5

Ortho-Creme vaginal cream
Ricinoleic acid and sodium lauryl sulphate in a cream base buffered at pH. 5.8

Ortho Diaphragm
and matching
Ortho Diaphragm Introducer
in washable, elegant and durable zipper bag of plastic yarn

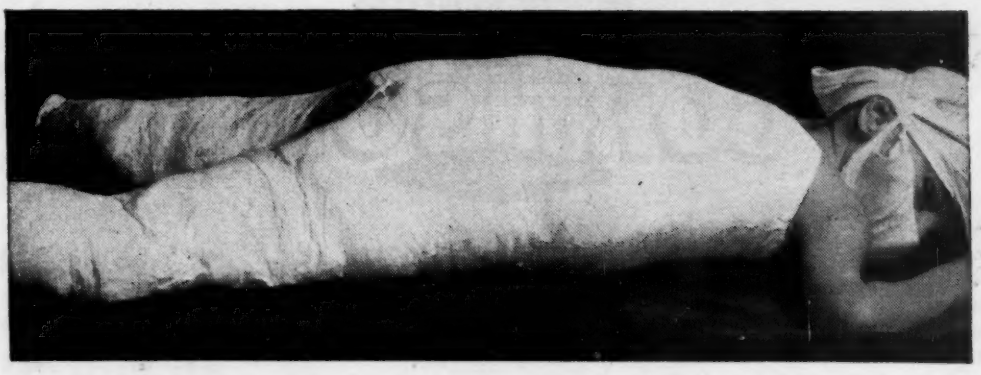
LITERATURE ON REQUEST

Ortho Pharmaceutical Limited

Ortho

HIGH WYCOMBE · BUCKINGHAMSHIRE · ENGLAND

IMMOBILIZATION BY GYPSONA AFTER SKIN GRAFTING OPERATION



These illustrations and the brief details below are of an actual case where, after a skin grafting operation, a Gypsona plaster of Paris cast was used to immobilize the patient.

In such a case Gypsona is particularly convenient. The bandages are ready for immediate use and are quick setting. Being evenly impregnated with a uniform content of plaster of Paris, they can be quickly formed into a strong but light cast — with a minimum of disturbance to the patient in the post-operative condition.

CASE HISTORY: Boy received a burn covering 16% of body surface. Plasma transfusion started and the burn dressed with penicillin cream.

There was almost complete skin destruction, and a fortnight later early granulations were visible through separating slough. Under general anæsthetic, these were stripped off leaving a clean raw area. This was covered with split skin grafts which were fixed with crepe pressure dressings. The child was immobilized in a Gypsona cast.

A week later, the cast was removed. 100% take of grafts. Tulle gras dressings applied. Three weeks later the boy was discharged home, walking satisfactorily.

OTHER SMITH & NEPHEW PRODUCTS USED IN THIS TECHNIQUE

JELONET (Tulle gras) is an open mesh gauze dressing impregnated with medicated soft paraffin containing 1.225% Balsam of Peru. Its non-adherent properties prevent dressing trauma, making it particularly suitable for wound areas encountered in skin grafting operations.

ELASTOCREPE is Elastoplast cloth without the adhesive spread. It therefore maintains uniform tension when stretched for long periods, keeping the pressure dressing firm throughout the immobilization.

Gypsona

PLASTER OF PARIS BANDAGES

Full details are available on request to the Medical Division, T. J. Smith & Nephew Ltd., Hull.

GYPSONA, ELASTOCREPE *and* **JELONET** *are made by T. J. Smith & Nephew Limited, Hull. Outside the British Commonwealth, Elastocrepe is known as Tensocrepe.*

HYDRO CORTISONE

MADE IN ENGLAND

AND

CORTISONE

MADE IN ENGLAND

ROUSSEL

HYDROCORTISONE ACETATE, 25 mg. per cc.; 5 cc. suspension

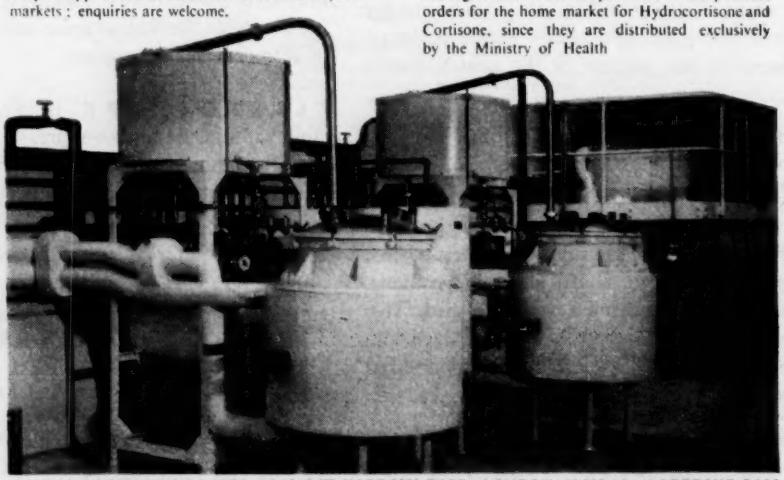
CORTISONE TABLETS, 5 mg. & 25 mg. Cortisone Acetate; bottles of 20
INJECTION, 25 mg. of Cortisone Acetate per cc.; 10 cc. vials
EYE DROPS containing 1% Cortisone Acetate; 3 cc. dropper bottles
EYE OINTMENT containing 1% Cortisone Acetate; Tubes of 3 G.

EIRE AND EXPORT

Ample supplies are available for Eire and Export markets: enquiries are welcome.

UNITED KINGDOM

We regret that we are not permitted to accept direct orders for the home market for Hydrocortisone and Cortisone, since they are distributed exclusively by the Ministry of Health



ROUSSEL LABORATORIES LTD., 843-847 HARROW ROAD, LONDON, N.W.10. LADBROKE 3608

For wide-range choice

of administrative forms...

Every recognized and commonly used means of PAS administration is made available through one or other of the various forms of 'Aminacyl' brand of Calcium PAS or of Sodium PAS B.P.C.

Cachets

Cryst. Ca or Na PAS: 1.5 g., 100's and 500's; 2.0 g., 80's and 400's.

Granulate

Cryst. Ca PAS: 100 g., 400 g., 2,000 g. packs

Dragées

Cryst. Ca or Na PAS: 0.4 g., 0.5 g., 0.75 g., 250's and 1,000's.

Dry Ampoules

1 and 6 × 2.41 g. crystal. = 2.0 g. Na PAS anhyd.

Solution Ampoules

Na PAS: 20% topical; 2.8% (isotonic) ophthalmic.

Bulk Powder

Cryst. Ca or Na PAS: 100 g., ¼, ½, 1 and 5 kg.

Intravenous

Purified crystalline Na PAS for I.V. solutions; bottle of 250 g.

Further information from the Medical Dept.,
A. WANDER LIMITED,
42 Upper Grosvenor Street,
Grosvenor Square, London W.1.

CANADA: A. Wander Ltd., Peterborough, Ontario.
AUSTRALIA: A. Wander Ltd., Devonport, Tasmania.
NEW ZEALAND: A. Wander Ltd., Christchurch.
INDIA: Grahams Trading Co. (India) Ltd., 16 Bank Street, Bombay.
PAKISTAN: Grahams Trading Co. (Pakistan) Ltd., P.O. Box 30, Karachi.
CEYLON: A. Baur & Co. Ltd., Colombo.

M.374

D

I CAN TAKE IT...

AND LIKE IT!

There's no trouble in persuading even very young children to take 'Dibencil'. Its pleasantly flavoured base meets with universal approval.
300,000 units of penicillin in each 5 c.c. (a large teaspoonful).

In bottles of 50 c.c.

'Dibencil'

Trade Mark
(N:N' dibenzylethylenediamine dipenicillin G.)

ORAL SUSPENSION

Reduced basic price under N.H.S.
1/3d. for 300,000 units.

ICI

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED

A subsidiary company of Imperial Chemical Industries Limited

WILMSLOW, MANCHESTER

Ph 422

AN EFFECTIVE **ORAL** MERCURIAL DIURETIC

Effective diuretic therapy by oral administration is now made possible by MERCLORAN. In many cases one tablet a day, equivalent to 10 mg mercury, has been sufficient to keep cardiac patients free from oedema. Where more intensive treatment is needed MERCLORAN, being well tolerated by the majority of patients, can be taken more often and in increased doses. The need for injection is thus frequently eliminated.

In severe cases, it is often desirable to initiate *treatment parenterally, in which case the chemically related compound MERCARDAN (meralluride Sodium U.S.P.) is available.*

MERCLORAN

(CHLORMERODRIN N.N.R.)

IN BOTTLES OF 25 AND 250 TABLETS

AND **MERCARDAN** FOR PARENTERAL USE

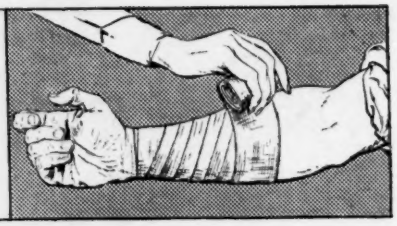
PARKE, DAVIS & COMPANY, LIMITED *(Inc. U.S.A.)* HOUNSLOW, MIDDLESEX. Telephone: Hounslow 2361
570

NOW AVAILABLE-

'FURACIN' SOLUBLE DRESSING

IN AN ECONOMICAL 1OZ. TUBE

For the treatment and prevention of INFECTION in WOUNDS, BURNS, ULCERS, etc.



FURACIN

(TRADE MARK)

the potent antibacterial specifically for local application

Active against all the common contaminants of wounds, burns, etc.

No risk of drug-resistance

No interference with healing or 'take' of skin-grafts

Active in the presence of blood, pus, faeces, etc.

'Furacin' Soluble Dressing in 1 and 2-oz. tubes, and 4 and 16-oz. jars

'Furacin' Solution in 2, 4 and 16 fl. oz. bottles

'Furacin' Ear Solution in 1 fl. oz. bottles with dropper

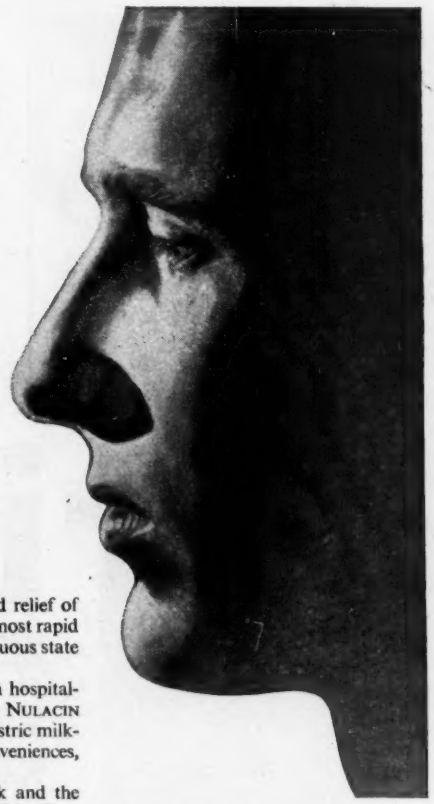
For cost to N.H.S., please see M. & J. list of costs dated October 1953

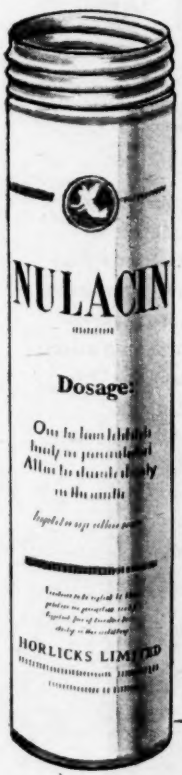
MENLEY & JAMES, LIMITED, COLDHARBOUR LANE, LONDON, S.E.5, ENGLAND

FP24

NULACIN

for continuous, maintained gastric anacidity





IT has long been recognized that the most rapid relief of the pain and discomfort of peptic ulcer and most rapid healing of the lesion are achieved when a continuous state of gastric anacidity is maintained.

Heretofore, this could only be attained with hospitalization and discomfort to the patient. Now, NULACIN offers all the advantages of continuous intragastric milk-alkali drip therapy without these attendant inconveniences, and achieves its end simply and effectively.

A NULACIN tablet placed between the cheek and the gum dissolves slowly and releases its contained medicaments at a rate that gives continuous neutralization of the acid gastric juice, and accomplishes this with considerably less antacid than is required by any other method employing oral administration.

INDICATIONS

NULACIN tablets are indicated whenever acid neutralization of the gastric contents is required: in active and quiescent peptic ulcer, gastritis, gastric hyperacidity.

Dosage: Beginning half-an-hour after food a NULACIN tablet should be placed in the mouth and allowed to dissolve slowly.

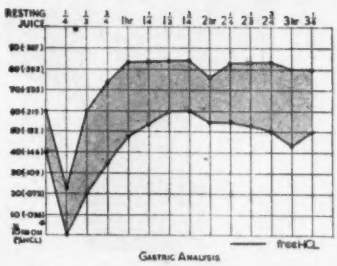
During the stage of ulcer activity, up to three tablets an hour may be required. During quiescent periods, for prophylaxis in peptic ulcer and for the relief of discomfort due to gastric hyperacidity, the dose of NULACIN is one or two tablets between meals.

NULACIN tablets are not advertised to the public and have no B.P. equivalent. May be prescribed on E.C.10. The dispensing unit of 25 tablets is free of purchase tax. (Price to pharmacists . . . 2/-.) Also available in tubes of 12.

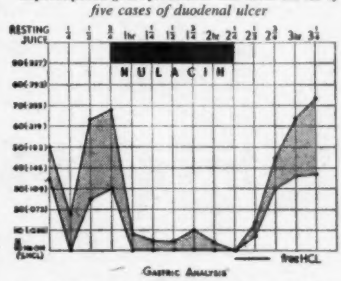
NULACIN tablets are prepared from whole milk combined with dextrins and maltose, and incorporate:
Magnesium Trisilicate 3.5 grs. Magnesium Oxide 2.0 grs. Calcium Carbonate 2.0 grs. Magnesium Carbonate 0.5 grs. Ol. Menth. Pip. q. s.

NULACIN

HORLICKS LIMITED *Pharmaceutical Division*
SLOUGH, BUCKS.



Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer



Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.

REFERENCES:
British Medical Journal, 180-182, *26th July*, 1953
Medical Press, 195-199, *27th February*, 1952

A new oral prophylactic tablet in the treatment of pre-cordial pain of angina pectoris:

Peritrate

TRADE MARK
brand of Pentaerythritol Tetranitrate

A coronary vasodilator, active ½ an hour after swallowing and effective for 4 to 5 hours. Each tablet is of 10 mg. strength.

Peritrate is a drug of considerable benefit in the prophylactic treatment of patients with coronary insufficiency, regardless of their age. The evidence of clinical trials indicates that in some cases Peritrate may protect completely against attacks; in others, the number of attacks is substantially reduced; while those attacks not prevented may be less intense and of shorter duration. Results so far obtained with Peritrate suggest that it is more efficacious than drugs such as aminophylline or khellin; also there are certain other beneficial effects which can be expected:

1. Less palpitation, especially at night.
2. Shortness of breath on effort, less severe.
3. An improvement of 50 per cent in distance walked.
4. Reduction of nitroglycerin requirement.
5. The negative S-T segment shifts, ordinarily occurring after exercise, modified; Peritrate has returned the abnormal resting electro cardiogram towards normal in a significant number of cases.

DOSAGE 4 to 8 tablets (40 to 80 mg.) as required.
PACKING Bottles of 50 and 500 tablets.

CHILCOTT *Laboratories* LTD

Sole Distributors: William R. Warner & Co. Ltd., Power Road, London, W.4

the 'family' tree . . .

A species of buckthorn tree supplies the 'sacred bark' from which Cascara Evacuant is made. Introduced to medicine by Parke, Davis over 50 years ago it is the ideal laxative for the safe and gentle relief of occasional or chronic constipation . . . for people of every age, in every family. A refined and palatable liquid, non-griping, non-habit forming, with no great tendency to after-constipation, Cascara Evacuant can be used for years without ill-effect. It is a *natural* tonic laxative.

Cascara Evacuant

PARKE-DAVIS

THE IDEAL TONIC LAXATIVE

Parke, Davis & Company Limited, *(inc. U.S.A.)* Hounslow, Middlesex. Tel: Hounslow 2361

291

*F 15

Prompt Effect — Low surface tension—readily absorbed by the mucosa.

Prolonged Action — The prompt, sustained effect of Fenox gives prolonged relief with small dosage.

Non-Oily — Fenox does not interfere with ciliary action and there is no danger of lipoid pneumonia.

Viscous — Fenox has the same viscosity as mucus and remains at the site of action.

Non-Irritant — Fenox is *p*H-adjusted and isotonic with the nasal secretion.

Non-Toxic — Free from undesirable side effects—suitable for children and adults.

The ideal nasal decongestant

For the treatment of catarrhal conditions

FENOX, the only preparation containing phenylephrine hydrochloride and naphazoline nitrate, marks an advance in the local treatment of catarrhal conditions of the nasal passages and accessory sinuses. It exhibits all the properties of the ideal nasal decongestant.

The advantages of FENOX are available at low cost—it is supplied in ½ fl. oz. dropper bottles—Retail Price 2/6d, subject to usual discounts.

Literature and "Patients' Directions" pads are available from the Medical Department, Boots Pure Drug Co. Ltd. Nottingham.

Boots

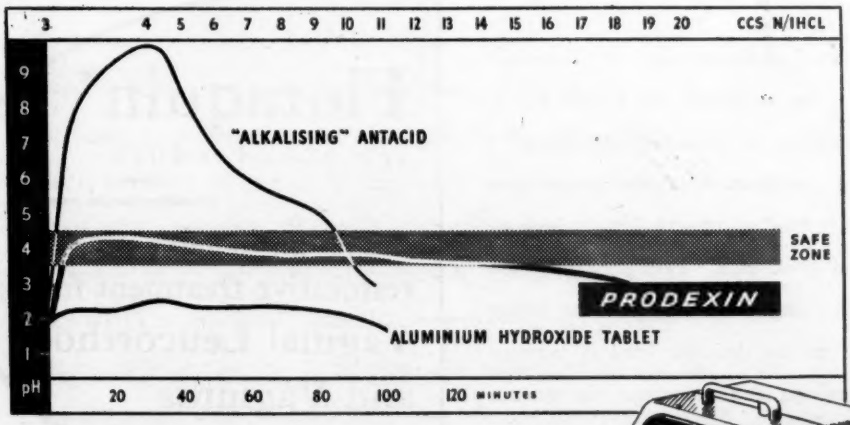
S192

FENOX

NASAL DROPS

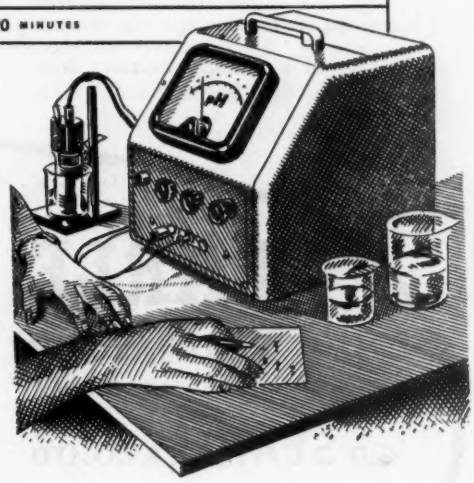
A New development providing CONTROLLED antacid therapy

Prodexin is a new product containing aluminium glycinate, and belongs to the buffer group of antacids. It depends for its action upon the slow release, on hydrolysis, of active aluminium hydroxide gel and glycine (amino acetic acid). Glycine rapidly raises the pH to 2, sparing the aluminium gel for the later stage of raising it into the "safe zone" of pH 3·5 to 4·5. Prodexin maintains an equable gastric environment for long periods without alkalisation.


3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 CCS N/1HCL
9 8 7 6 5 4 3 2 1 pH
"ALKALISING" ANTACID
SAFE ZONE
PRODEXIN
ALUMINIUM HYDROXIDE TABLET
20 40 60 80 100 120 MINUTES

Prodexin provides a convenient, economical and safe treatment for HYPERACIDITY and PEPTIC ULCER.

The tablets, sucked one at a time, maintain the pH of the stomach contents within the "safe zone" for up to two hours. With Prodexin there is no risk of acid rebound or alkalosis. Prodexin tablets are pleasant to suck and they do not form gritty particles in the mouth or give rise to constipation.



PRODEXIN

Each tablet contains:—

Aluminium glycinate.....0·9 gramme.
(*dihydroxy aluminium aminoacetate*)
Light magnesium carbonate.....0·1 gramme.

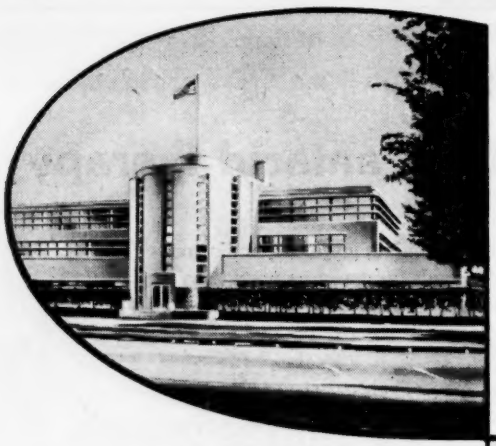
The basic N.H.S. cost of treatment at the rate of 6 Prodexin tablets daily is 8½d.

Manufactured in the laboratories of

C. L. BENCARD LIMITED

MINERVA ROAD · PARK ROYAL · LONDON N.W.10

BENCARD



from the

SEARLE

Research Laboratories

to Doctors in Great Britain

come

The two fundamental aims of 'Floraquin' are to acidify the vagina and to eradicate all offending organisms. A skilful combination of the potent protozoacide Diodoquin* with lactose, dextrose, and boric acid, 'Floraquin' not only destroys pathogenic organisms but brings the pH to the desirable level of between 3.8 and 4.4 and encourages the growth of a normal protective flora.

SEARLE

Floraquin*

TABLETS and POWDER

brand of di-iodohydroxyquinoline compound

A comprehensive restorative treatment for Vaginal Leucorrhoea and Vaginitis

'Floraquin' therapy consists of insertion of two moistened 'Floraquin' vaginal tablets high in the vaginal vault night and morning, supplemented by 'Floraquin' powder insufflation twice or thrice weekly; treatment being continued through the menses. 'Floraquin' Powder is supplied in 1 oz. bottles (2.15 gm. Diodoquin* per ounce); 'Floraquin' Tablets in boxes of 24 (each tablet containing 100 mg. Diodoquin*).

**Diodoquin (Searle) is a non-toxic, insoluble, highly protozoacidal di-iodide of hydroxyquinoline.*

Literature on request.

*TRADE MARK

SEARLE

Ethical Pharmaceuticals since 1888

G.D. SEARLE & CO., LTD.

17, Manchester Street
London, W.1.

Telephone: Welbeck 1306

Every patient with essential hypertension is a potential candidate for ***RAUDIXIN*** *therapy*

RAUDIXIN is prepared from the roots of Rauwolfia serpentina, gathered in the foothills of the Himalayas. It is supplied as coated tablets, each containing 50 mg. of whole root, the uniformity of which is controlled by animal assay. Because of its safety and the stability of its hypotensive effect, RAUDIXIN can be confidently prescribed for all patients with essential hypertension. It is especially recommended for the large, indeterminate group whose symptoms are not severe enough to warrant the use of other hypotensive agents. Critical adjustment of dosage is unnecessary.

In more advanced cases, RAUDIXIN is a valuable adjunct to other agents.

RAUDIXIN TABLETS

are available in bottles of **25,** *100 and 1,000.*

E. R. SQUIBB AND SONS

17-18 OLD BOND STREET, LONDON, W.1.

Attacks of MIGRAINE

respond to ORAL TREATMENT

with CAFERGOT

The parenteral administration of cerebra vasoconstrictors of the ergot series was formerly imperative to abort so many as 80 to 90 per cent. of migraine attacks.

CAFERGOT given **ORALLY** is effective in at least 80 per cent. of attacks.

CAFERGOT is a combination of ergotamine tartrate (1 mg.) and caffeine (100 mg.)

References

Proc. Mayo Clin., 1948, **23**, 105.
New England J. Med., 1949, **241**, 896.
J. Mo. med. Ass., 1951, **48**, 963.

Full information on request

SANDOZ PRODUCTS LIMITED

134, Wigmore Street, London, W.1.

SANDOZ

NEW ORAL ANTIHYPERTENSIVE

SERPASIL

containing RESERPINE

a pure crystalline alkaloid isolated in the

CIBA RESEARCH LABORATORIES

from Rauwolfia serpentina

It produces

GRADUAL AND SUSTAINED

REDUCTION OF BLOOD PRESSURE

with MILD SEDATION

Dosage is simple, there is a wide safety margin and side effects are extremely rare. When appropriate Serpasil may be combined with Apresoline-Ciba in the treatment of hypertension.

Tablets of 0.1 mg. and 0.25 mg. in bottles of 25, 100 and 500.

'Apresoline' and 'Serpasil' are registered trade marks. Reg. user:

CIBA LABORATORIES LIMITED

HORSHAM · SUSSEX

Telephone: Horsham 1234. Telegrams: Cibalabs, Horsham.

1/3

AUREOMYCIN

AUREOMYCIN

HYDROCHLORIDE CRYSTALLINE

Foremost in antibiotic therapy

LOW DOSAGE

LOW COST

BROAD SPECTRUM

DRAMATIC RESPONSE

FLEXIBILITY OF DOSAGE FORMS

Two all-important qualities have placed aureomycin in the outstanding position it holds today—its universally recognised effectiveness and its extremely wide range of action. A host of pathological conditions arising from bacterial, rickettsial, large viral and protozoal invasions have been found to respond to aureomycin. A dosage of 1 Gm. daily is usually curative and the total dose required is lower than with other antibiotics. The abbreviation of hospital stay and convalescence thus made possible by aureomycin saves many times its cost.

CAPSULES : DENTAL CONES : DENTAL PASTE : INTRAVENOUS NASAL : OINTMENT : OPHTHALMIC OINTMENT : OPHTHALMIC : OTIC SOLUBLE TABLETS : SPERSOIDS* : TROCHES : VAGINAL POWDER

* *Trade Mark*

Literature on request

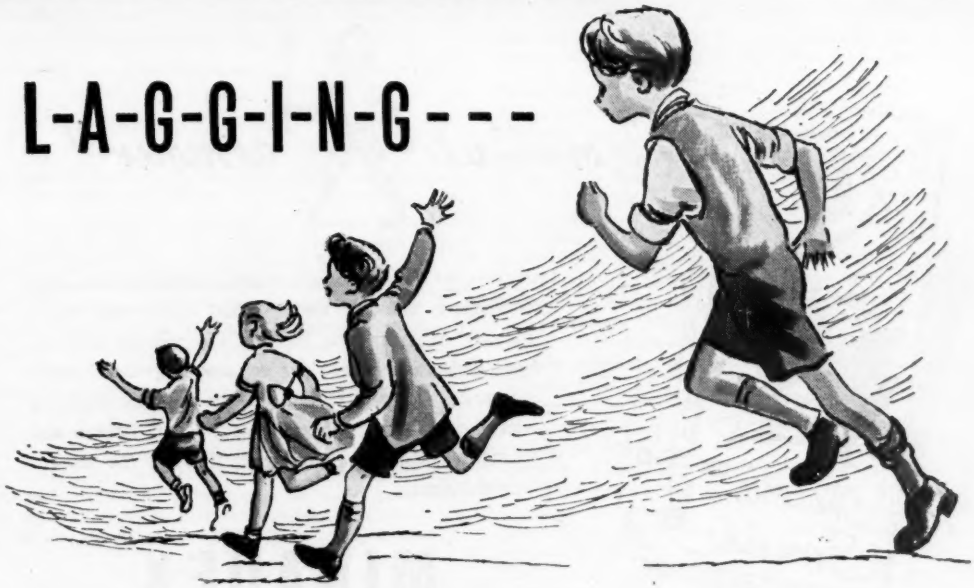
LOOK TO Lederle FOR LEADERSHIP

LEDERLE LABORATORIES DIVISION

Cyanamid Products Ltd.

BUSH HOUSE • ALDWYCH • LONDON W.C.2 • TEMPLE BAR 5411

L-A-G-G-I-N-G - - -



There's very little wrong with him really except . . .

...THREADWORMS, which can be rapidly eliminated with 'Antepar' brand Elixir, a stable preparation of piperazine, which wide clinical experience has confirmed as the most efficient oxyuricide in use today.

The stringent hygienic measures usually associated with threadworm treatment are not necessary with 'Antepar', nor is there need for any special regimen of fasting and purging.

'Antepar' Elixir, with its pleasant flavour, is readily accepted by children of all ages, and is well tolerated at the recommended dosage level. It contains 500 mgm. of piperazine hydrate per fluid drachm and is available in bottles of 4 fl. oz. (6/6 plus 1/3 P.T.) and 20 fl. oz. 24/9—exempt P.T.) subject to discount.

ADVANTAGES

OUTSTANDING EFFICACY

•

RAPID CURE

•

WELL TOLERATED

•

SIMPLY ADMINISTERED

•

PLEASANTLY FLAVOURED

•

NO SPECIAL REGIMEN NEEDED

'Antepar' BRAND **ELIXIR**

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* LONDON

Youthful armour

Infections are quick to pierce youthful armour; even over-excitement is liable to leave a child listless and below par. But Minadex can smooth the passage through those formative years. By replenishing the blood's reserves of iron and by ensuring an adequate intake of vitamins A and D, Minadex staves off fatigue and fortifies resistance to infection through the *natural* mechanisms.

MINADEX

Trade mark

mineral-vitamin tonic: orange flavoured

In 6-oz. and 12-oz. bottles; (and in 80-oz. winchesters)

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX BYRon 3434

Pleasurable relaxation

In addition to the established use of Myanesin Elixir in the treatment of neurological conditions associated with muscular rigidity and tremor it has now been successfully employed in the relief of psychological states characterised by anxiety and tension. Amer. J. Med. Sci., 1950, 220, 23 describes a group of patients in which anxiety states and obsessional conditions were present and which following the administration of mephenesin, the active constituent of Myanesin Elixir, obtained complete relaxation. Best results occurred in anxiety states, however chronic, and 47 out of 50 patients treated for this condition improved.

Dosage of from ½ to 1 tablespoonful, one to six times daily, is suggested.

'MYANESIN' ELIXIR

Containing 1 gramme mephenesin in each tablespoonful. Bottles of 8 fl. oz. 4/6; 40 fl. oz. 19/8.
Also available 'Myanesin' Tablets each containing 0.5 gramme mephenesin. Bottles of 50 at 6/10.
Basic N.H.S. prices.

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

Myn/h/2

CHRONIC BRONCHITIS

FACTORS IN PATHOGENESIS AND THEIR CLINICAL APPLICATION

NEVILLE C. OSWALD
T.D., M.D. Camb., F.R.C.P.

ASSISTANT PHYSICIAN, ST. BARTHOLOMEW'S HOSPITAL; PHYSICIAN, BROMPTON HOSPITAL, LONDON

THE commoner clinical features of chronic bronchitis have recently been described (Oswald et al. 1953); and May (1953a and b) and Reid (1954) have sought to define the bacteriology and morbid anatomy of the disease. In each of these papers much attention was paid to the factors of infection and excessive mucus in the lungs. Indeed, the relationship between infection and bronchial mucus constitutes the essence of the pathogenesis of chronic bronchitis. It is a problem which may be studied in many different ways, for it involves the physiology and biochemistry of mucus, bacteriology, morbid anatomy, immunology, animal experiments, climatic conditions and atmospheric pollutants, heredity, allergy, and endocrine influences. In this paper these aspects are reviewed and their possible bearing on the clinical management of bronchitic patients is indicated.

Pathogenesis

Mucus

The term "mucus" denotes a viscid material secreted on a mucous membrane. Clinicians usually speak of "mucus," with its adjectives "mucous" and "mucoid"; but most biochemists prefer "mucin" and "mucilaginous," and refer to the ingredients which cause its viscosity as "mucins." Mucin consists almost entirely of a complex combination and mixture of proteins and carbohydrates, which vary from one type of mucin to another. Of the mucins which have been identified (and many have not) those which consist largely of proteins may be termed "mucoproteins" and those which are mainly carbohydrates "mucoids," but there is no sharp chemical distinction between them (Morgan 1953). In health the whole of the respiratory tract is covered with a thin layer of mucus, which derives from the goblet-cells and mucous glands. This covering is essential for the proper conditioning of the inspired air. Solid particles adhere to its surface, and noxious gases are largely dissolved before the air reaches the alveoli. Humidification, which takes place mainly in the nose (Negus 1952), involves the transference of about 400 ml. of water from the mucosa to the inspired air in each twenty-four hours, in the English climate; the efficiency of this mechanism is determined largely by the thickness and consistency of the layer of mucus.

In disease there is occasionally under-activity of the mucus-secreting elements. There may be atrophic rhinitis, or the walls of the bronchi may be thin, fibrous, and atrophic, a well-recognised pathological variant of chronic bronchitis; or the process may be more complete, as in Sjögren's disease. Far more commonly mucus is present in excess of the normal, and this state is usually associated with œdema of the mucous membrane. If this occurs in the upper air-passages the delicate air-conditioning function of the nose is impaired, so that the warming and humidification of the inspired air devolves largely on the trachea and bronchi, which, with their comparatively poor mucosal blood-supply, are less well adapted than the nose for such a function; this may in turn affect the viscosity of the bronchial mucus. If excessive mucus is present in the bronchi, the normal mechanism of its evacuation is overcome. Ordinarily, the rhythmic waves of the cilia can transfer about 150 ml. of mucus every twenty-four hours from the bronchi and trachea to the œsophagus. When this quantity is exceeded, and especially if the viscosity is increased, the cilia exert little more than a churning action on the mucus, which steadily accumulates in the lungs.

Infection

In health the upper air-passages harbour various bacteria, the commonest of which are streptococci, pneumococci, staphylococci, *Neisseria catarrhalis*, *Hæmophilus influenzæ*, and diphtheroids. The trachea and bronchi are usually sterile or contain at most a few nasopharyngeal organisms (Stuart-Harris et al. 1953). In chronic bronchitis there are many bacteria in the bronchi; these have been divided by May (1953a) into: (1) potential pathogens—namely, pneumococcus, *H. influenzæ*, *Staphylococcus aureus*, group-A hæmolytic streptococcus, and Friedländer's bacillus; and (2) organisms of doubtful pathogenicity, such as *Streptococcus viridans*, non-hæmolytic streptococcus, diphtheroid bacilli, *N. catarrhalis*, and *Staph. albus*. In purulent sputa he always found at least one potential pathogen, usually the pneumococcus or *H. influenzæ* or both; potential pathogens were found in rather less than half the specimens of mucoid sputum examined. The organisms of doubtful pathogenicity, which were found in both purulent and mucoid sputa, closely resembled the nasopharyngeal organisms and were regarded as harmless commensals. This search for potential pathogens rather than for predominant organisms is justified by the results of treatment with selective antibiotics (May 1953b); and the incrimination of the pneumococcus and *H. influenzæ* as the chief pathogenic organisms agrees with the findings of Stuart-Harris et al. (1953), who emphasise the importance of the pneumococcus, and of Mulder et al. (1952), who draw attention particularly to *H. influenzæ*.

The pattern of infection can be surmised only in part. During remissions the bronchi contain for the most part non-pathogenic organisms. During relapses the pneumococci are probably derived from an internal source, since their types resemble more closely those found in the nasopharynx than those which usually cause pneumonia (Stuart-Harris et al. 1953). The source of *H. influenzæ* is also probably the nasopharynx, where they are normally present in more than half the population (Rosher 1939). The precipitating cause of the original attack of bronchitis may be one of these pathogenic organisms, but this is uncertain because of the absence of bacteriological reports at the onset of symptoms in patients who subsequently develop chronic bronchitis.

The part played by viruses is very difficult to determine, largely because of our scanty knowledge of their behaviour. In recent years, however, knowledge of those which are pathogenic to the respiratory system has rapidly increased. Since the original demonstration of influenza virus A by Smith et al. (1933), virus B (Francis 1940b, Magill 1940) and virus C (Taylor 1949) have been added and different strains within the groups identified. The virus of psittacosis has been discovered (Bedson et al. 1930, Levinthal 1930, Krumweide et al. 1930), and pneumonotropic viruses are presumed to be associated with the rise in titre of cold-agglutinins and agglutination of streptococcus M.G. which are sometimes encountered in influenza-like illnesses. The closely related rickettsial bodies found in Q fever (Burnet and Freeman 1937) may produce similar clinical features. The virus of the common cold has so far eluded recognition, but its existence is not doubted. From the evidence available, it seems commonly to enter the nasopharynx, but the attack-rate is low and signs of clinical infection develop only when the host's state of immunity is favourable to it (Andrewes 1949, Lovelock et al. 1952). Probably febrile respiratory catarrh can be caused by other viruses which have yet to be identified. Whether viruses are concerned in the original attack of bronchitis is not known; but certainly they are commonly associated with relapses, and agglutination tests are frequently

positive during remissions (Stuart-Harris 1953). If virus infection does take place, it may rapidly spread down to the bronchi and be enhanced by such exogenous and endogenous pathogenic bacteria as may be present at the time.

The morbid anatomical features, as described by Reid (1954), are an expression of the final stage of the disease. The larger bronchi show, in addition to evidence of inflammation, gross overactivity of the mucus-secreting elements; but they are still able to function as conductors of air during respiration. The serious abnormalities are in the bronchioles and lobules, which display the whole range of infective changes from pneumonic consolidation and abscess formation to collapse and fibrosis. These changes, assisted no doubt by the abundance of mucus, lead to progressive obliteration of the lobules and consequent diminution of pulmonary efficiency. The more normal parts of the lung distend to compensate for the loss of tissue by scarring; and this process, together with valvular distensions at the bronchiolar and alveolar levels, produces emphysema. These findings are compatible with the usual history in chronic bronchitis of increasing breathlessness over a period of years punctuated by exacerbations of infection.

Relation of Mucus to Infection

Much experimental work has been done on the relation of mucus to infection, and this has been reviewed by Olitzki (1948). Particular attention has been paid to the effect of mucus on the resistance of various species to infection. This has been variously termed the "virulence-enhancing action" (Smith 1950), the "resistance-lowering effect" (Olitzki 1948), the "infection-promoting effect" (Lambert and Richley 1952), and the "aggressin-like action" of mucus (Ercoli et al. 1945). In view of the absence of any appreciable increase in virulence of various organisms when cultured in a medium containing mucus (Rake 1935, Nungester and Jourdonais 1936, Sindbjerg-Hansen 1943), perhaps the "resistance-lowering action" is the happiest designation.

The effect on bacteria of mucus derived from the gastro-intestinal tract has often been studied. The results, though not necessarily applicable to bronchial mucus, may be taken as a rough guide to the type of reaction to be expected. In vitro, mucus is a poor culture medium (Miller and Castles 1936, Keefer and Spink 1938); but if mixed with pathogenic organisms, and injected intraperitoneally into laboratory animals, it causes a characteristic response. The organisms enter the blood-stream as rapidly as they would if they were injected alone; but the mucus prolongs the feeding of the blood-stream, often with a steadily increasing bacteræmia (Olitzki and Koch 1945, McLeod 1941), and this sometimes renders fatal a dosage of organisms which would otherwise be overcome. In the inoculum the advance of leucocytes may be considerably delayed by the mucus, almost certainly because it provides a protective coating for the bacteria (Olitzki 1948). Once the leucocytes have become established, mucus no longer affords any protection (Ercoli et al. 1945). A great variety of organisms have been used for experiments of this sort, including the pneumococcus (Nungester et al. 1932, Catron 1935, Sindbjerg-Hansen 1943) and *H. influenzæ* (Fothergill et al. 1937), and their behaviour conforms to a very similar pattern. In the respiratory system a resistance-lowering action by mucus has been suggested by the action of intratracheal injections of mucus together with organisms in producing pneumococcal pneumonia in rats (Nungester and Jourdonais 1935, 1936) and influenzal pneumonia in hamsters (Wheeler and Nungester 1942); but whether this is due entirely to the additional viscosity has not yet been determined.

The physicochemical components of mucus which promote this resistance-lowering effect are not fully understood but are certainly complex. Viscosity by itself does not modify the action of bacteria injected intraperitoneally, as can be seen by substituting gum-tragacanth for mucus (McLeod 1941). Indeed both the protein and the carbohydrate fractions of mucus lower host resistance (Morgan and King 1943, Olitzki and Koch 1945). Smith (1953) concludes that at least three factors are involved—namely, a viscous medium, particulate insoluble matter, and a "third factor" which consists at least partly of a heparin-like polysaccharide.

Some immunological aspects of respiratory mucus have recently been investigated. Experiments on the antiviral properties of the nasopharyngeal secretions are naturally hindered by our incomplete knowledge of the viruses concerned, but Francis (1940a) has shown that such secretions inhibit relatively large amounts of influenza virus. The wide variations in the strength of this action in different individuals is in keeping with the fluctuations in susceptibility to influenzal infections that are commonly noted in clinical practice. Fazekas de St. Groth (1951) has confirmed Francis's conclusions and shed further light on the nature of antiviral bodies in respiratory mucin. The question of bacterial antibodies in respiratory mucus, of the type recognised by Davis (1922) in agglutination tests on fæcal mucus in bacillary dysentery, has not yet been elucidated.

Clinical Application

There is no doubt that bronchitic patients often have a mucoid sputum, particularly during remissions. To what extent the mucus is a result of hypersensitivity, infection, and external irritants is not clear, but presumably all three play a part.

Hypersensitivity and Infection

These two factors cannot be considered separately since there is almost always a clear history of a respiratory infection at the onset of symptoms. Following the infection, the bronchi become hypersensitive, being particularly susceptible to further infection and to external stimuli, and they often secrete large quantities of mucus. Whether this hypersensitivity should be regarded as a form of allergy depends largely on terminology. Allergy is usually regarded as an acquired hypersensitivity to a specific substance or substances which are not normally noxious, and the allergic reaction consists of a characteristic antigen-antibody response to contact between an appropriate allergen and sensitised cells. The hypersensitivity of chronic bronchitis is less specific and is particularly related to infection, atmospheric pollution, and climatic factors. Doubtless many different allergens can produce clinical features which are indistinguishable from those of chronic bronchitis. Also, chronic bronchitis with an intractable mucoid sputum often progresses to bronchospasm. Thus a bronchial infection may be followed by a pattern which is commonly regarded as typical of an allergic reaction; but there is no clear justification for regarding this pattern as anything more than a non-specific response to an irritant (in this case an infection), especially since the commoner allergens seem to have no connection with most cases.

Perhaps of greater practical importance than the nature of bronchial hypersensitivity is the clinical differentiation between asthma and bronchitis. There is undoubtedly a gradation from the typical asthmatic, with paroxysmal dyspnœa and a personal or family history of allergic disorders, to the patient, usually a middle-aged man, who has recurrent bouts of bronchial infection with purulent sputum and gradually increasing dyspnœa. In between these extremes are patients, principally with a persistent mucoid sputum and dyspnœa, who seem to belong to neither group. If there are features suggesting allergy, such as a positive family history, the term "allergic bronchitis" may be appro-

priate (Ellis 1948); but the word "asthma" is rarely used in Britain unless there are well-defined attacks of spasmodic dyspnœa, and consequently the great majority of cases are labelled bronchitis. Indeed the standard morbidity and mortality figures for the country show only one case of asthma for every ten of bronchitis. The reasons for the lack of support for an allergic ætiology are not far to seek. Nearly all such patients are investigated and cared for by general or chest physicians, who are more impressed by the infective element at all stages than by the allergic aspect which, in the absence of proof of the importance of the commoner allergens in the great majority of cases and the ineffectiveness of treatment by anti-allergic methods, has received less attention than it deserves.

External Irritants

Apart from evidence of an initial infection, little is known about the mode of onset of chronic bronchitis. Certainly, a history of bronchitis in near relations is three times as common in bronchitics as in others, so hereditary predisposition is likely. Also, external stimuli seem to be able to condition the bronchi in such a way as to render them more susceptible to infection. The view is supported by the age at onset of symptoms. Few suffer from chronic bronchitis under the age of thirty, and the decade in which the greatest number start to have symptoms is from fifty to fifty-nine years, which would be in keeping with a prolonged effect from atmospheric impurities. That these are a contributory cause is strongly suggested by comparison of deaths from bronchitis in urban and in rural areas, which vary little from year to year. In 1949 the rate for males was 91 per 100,000 in towns, and 62 in rural areas; the figures for females were 55 and 42 (Registrar-General 1951). Atmospheric pollution varies greatly, amounting to as much as 300 tons of deposited matter per square mile per annum in highly industrialised cities, compared with 50 tons or less in rural areas (Department of Scientific and Industrial Research 1949); and the death-rate from bronchitis is closely related to atmospheric pollution. Here, then, is a ready explanation of the higher mortality in cities; and it is tempting to assume that if the atmospheric pollution all over Britain were reduced to the amount found in country districts, the annual total of deaths from bronchitis would be reduced by about 10,000—that is, by one-third. This assumption would not, however, be incorrect since town-dwellers are exposed to considerably greater risk of contracting respiratory infections from contacts and many work in an atmosphere of dusts, fumes, chemicals, or heat which, while contributing little to the total atmospheric pollution, may be harmful to the respiratory system.

Another factor that may render the bronchi susceptible to bronchitis is tobacco-smoke. Heavy smokers nearly always have an excess of mucus in the bronchi, and the volume is usually diminished if the smoking is reduced or abandoned. Moreover the proportion of non-smokers is smaller in bronchitics than others, so smoking almost certainly does predispose to bronchitis.

So far as climate is concerned, there is no evidence that this alone predisposes to or causes bronchitis, but pollution of cold damp air seems to provide the conditions under which bronchitis is most likely to develop.

Thus various factors seem to operate at the onset of bronchitis, the most important being infection, external stimuli, and hereditary predisposition. Once the bronchi have become sensitised, any of the irritants already mentioned may aggravate symptoms, the most prominent of which is excessive mucus; but this effect is often overshadowed by the irritation caused by fog, dampness, and cold.

Prophylaxis

Mild chronic bronchitis is so common and often lasts for so many years that prophylactic measures are rarely undertaken. Only when dyspnœa starts or exacerbations of infection become troublesome is medical advice normally sought. The onset of this stage means either that the initial infection has been incompletely overcome or that the predisposing factors already considered have begun to have an effect, or both. Therefore, careful notice should always be taken of symptoms during the convalescent stage of any respiratory infection, in the knowledge that bronchial catarrh is the commonest sequel of both acute bronchitis and pneumonia. Should cough and sputum persist, especially if accompanied by a wheeze or dyspnœa, removal at least temporarily from a smoke-laden atmosphere and abandonment of tobacco-smoking should be advised. If pus persists in the sputum, antibiotics are indicated, but these are unlikely to affect a mucoid sputum.

Principles of Treatment

Once the disease has become established and lobular obliteration has started, the first aim of treatment must be to prevent pathogenic organisms from reaching the bronchioles and to overcome the lobular inflammation as far as possible. Probably this can best be achieved by the patient going to live permanently in a clear, warm, and dry atmosphere. This is beyond the means of the vast majority of bronchitics, but often half-measures at home and at work are helpful. Eradication of foci of infection in the nose and throat, prevention of contact infection, and prompt treatment of exacerbations will help to reduce the rate of progress of the disease. Small doses of sulphonamides or antibiotics over a long period are unsatisfactory, because of toxic complications and bacterial resistance. The choice of drugs for short courses is still somewhat difficult. As has already been mentioned, by far the commonest pathogens are pneumococcus and *H. influenzæ*. Pneumococcal infection can easily be eradicated by penicillin. *H. influenzæ* seems to be more susceptible to chloramphenicol than to any of the other usual antibiotics; it is rather less susceptible to streptomycin (May 1953b). Chloramphenicol has the disadvantage of toxic complications but it is easy to administer; streptomycin is the safer drug. Possibly a combination of penicillin and streptomycin is best for routine use (Mulder et al. 1952), especially if laboratory facilities are not available; but large-scale tests have not yet been reported and relapses are common. Perhaps erythromycin or carbomycin will in time prove the best remedy against *H. influenzæ* (Barach 1953).

While aureomycin is effective against Q fever and infections associated with a high titre of cold-agglutinins and agglutinins for streptococcus M.G., no known antibiotic or other remedy affects the influenza or cold viruses. The life cycles of the smaller viruses are so intimately connected with the cells they attack that the discovery of an agent which will kill one without the other may be very difficult (MacCallum 1951).

Many attempts have been made to reduce the viscosity of sputum, with a view to aiding its expectoration. Air-conditioning has not been tried on a large scale in chronic bronchitis, nor is opinion unanimous about the optimum temperature and humidity. Proetz (1941) considers that 45% is the most comfortable relative humidity in health; this rarely obtains in England and perhaps a rather greater humidity and a temperature of about 70°F would be the ideal for a bronchitic who is trying to avoid a relapse. If a relapse has occurred or the sputum is viscous, then a relative humidity of about 70% might be preferable; this is advocated by Negus (1952) for cases of acute tracheo-bronchitis. Mathieu et al. (1951) suggest a relative humidity in the region of 90%

for tenacious sputum, but these higher concentrations are very difficult to maintain without water condensing on the patient and his belongings.

The possibility of lowering viscosity by aerosol inhalation has recently been investigated. Limber et al. (1952) claim successful results with trypsin in various pulmonary conditions, and Miller (1952) has had similar results with a mild detergent. Calcium chloride has been efficacious in the hands of Charlier and Phillipot (1949) and Howell (1953). Further studies along these lines may be most rewarding, especially if the drugs can eventually be given safely, easily, and reasonably quickly.

Personal experience of a small series of bronchitics treated with cortisone or corticotrophin has been disappointing, especially in the elderly. Patients under the age of fifty with a mucoid sputum, a wheeze, and no obvious evidence of infection may be improved, sometimes dramatically. The efficacy of these remedies during acute episodes such as are produced by fogs has not yet been assessed. Another possible endocrine approach is suggested by the curious relationship between cystic fibrosis of the pancreas and a generalised overactivity of the mucus-secreting elements of the body. Andersen (1938), in her comprehensive review of the disease, suggested that the muco-viscosis of the respiratory tract was due to a deficiency of vitamin A. This view has found little support; and the opinion of Farber (1943, 1944), that the defect is not pancreatic in origin but is primarily one of the mucous glands, is now generally accepted. In support of Farber's opinion, Bodian (1952) cites examples of rare congenital pancreatic dysplasias which are not associated with muco-viscosis. Baar (1953) considers that the pathogenesis of the disorder is as obscure as ever and hopes that the successful experimental production of both the pancreatic and mucous abnormalities in rats by dietary means and by injections of carbon tetrachloride and paradysentery toxin (Véghelyi et al. 1950a and b) will enable the condition to be better understood.

In the later stages of chronic bronchitis, when much pulmonary tissue has been lost and the inspired air takes a tortuous course to the remaining effective alveoli, correct breathing will enable the lungs to maintain their tidal air with the least physical exertion, and attention will then need to be directed towards the oxygen requirements of the body and the state of the heart.

Summary

The pathogenesis of chronic bronchitis devolves largely on the relation of bronchial mucus to infection.

Knowledge of the nature and functions of mucus is steadily accumulating. Its chemical composition and physiological properties are better known. It contains specific antibacterial and antiviral bodies, and reduces the resistance of animal hosts to infection. Excessive secretion is caused by a great variety of stimulants, many of which seem to be unconnected with allergy.

The range of bacteria which are commonly pathogenic to the lungs is limited and clearly defined; but little is known of the part played by viruses, largely because they have only recently been discovered and are difficult to identify.

Air-conditioning, antibiotics, and agents which reduce the viscosity of mucus may become effective means of treatment in the future.

REFERENCES

Andersen, D. H. (1938) *Amer. J. Dis. Child.* **56**, 344.
Andrewes, C. H. (1949) *Lancet*, i, 71.
Baar, H. S. (1953) *Ibid*, ii, 80.
Barach, A. L. (1953) *Ibid*, i, 1103.
Bedson, S. P., Western, G. T., Simpson, S. L. (1930) *Ibid*, i, 235.
Bodian, M. (1952) Fibrocystic Disease of the Pancreas. London.
Burnet, F. M., Freeman, M. (1937) *Med. J. Aust.* ii, 299.
Catron, L. (1935) *J. exp. Med.* **61**, 735.
Charlier, R., Phillipot, E. (1949) *Arch. int. Pharmacodyn.* **78**, 559.
Davis, A. (1922) *Lancet*, ii, 1009.
Department of Scientific and Industrial Research (1949) The investigation of atmospheric pollution. H.M. Stationery Office.
Ellis, R. V. (1948) *In* The Chest and the Heart. Ed. J. A. Myers and C. A. McKinlay. Springfield, Ill.; p. 501.
Ercoli, N., Lewis, M. N., Harker, E. (1945) *Proc. Soc. exp. Biol., N.Y.* **59**, 273.
Farber, S. (1943) *New Engl. J. Med.* **229**, 653.
— (1944) *J. Pediat.* **24**, 387.
Fazekas de St. Groth, S. (1951) *Aust. J. exp. Biol. med. Sci.* **29**, 339.
Fothergill, L. D., Dingle, J. H., Chandler, C. A. (1937) *J. exp. Med.* **65**, 721.
Francis, T. (1940a) *Science*, **91**, 198.
— (1940b) *Ibid*, **92**, 405.
Howell, T. H. (1953) *Practitioner*, **171**, 287.
Keefer, C. S., Spink, W. W. (1938) *J. clin. Invest.* **17**, 23.
Krumweide, C., McGrath, M., Oldenbusch, C. (1930) *Science*, **71**, 262.
Lambert, H. P., Richley, J. (1952) *Brit. J. exp. Path.* **33**, 327.
Levinthal, W. (1930) *Klin. Wschr.* **9**, 654.
Limber, C. R., Reiser, H. G., Roettig, L. C., Curtis, G. M. (1952) *J. Amer. med. Ass.* **149**, 816.
Lovelock, J. E., Porterfield, J. S., Roden, A. T., Sommerville, T., Andrewes, C. H. (1952) *Lancet*, ii, 657.
MacCallum, F. O. (1951) *Practitioner*, **167**, 397.
McLeod, C. (1941) *Amer. J. Hyg.* B, **34**, 51.
Magill, T. P. (1940) *Proc. Soc. exp. Biol., N.Y.* **45**, 162.
Mathieu, P. L., West, E. J., Lehman, S., Mathieu, B. (1951) *Ann. Otol., &c., St. Louis*, **60**, 668.
May, J. R. (1953a) *Lancet*, ii, 534.
— (1953b) *Ibid*, p. 899.
Miller, C. P., Castles, R. (1936) *J. infect. Dis.* **58**, 263.
Miller, J. B. (1952) *Amer. J. Dis. Child.* **84**, 616.
Morgan, W. T. J., King, H. K. (1943) *Biochem. J.* **37**, 640.
— (1953) *Proc. R. Soc. Med.* **46**, 783.
Mulder, J., Goslings, W. R. O., Van Der Plas, M. C., Lopes Cardozo, P. (1952) *Acta med. scand.* **143**, 32.
Negus, V. E. (1952) *Thorax*, **7**, 148.
Nungester, W. J., Wolf, A. A., Jourdonais, L. F. (1932) *Proc. Soc. exp. Biol., N.Y.* **30**, 120.
— Jourdonais, L. F. (1935) *J. Bact.* **29**, 34.
— — (1936) *J. infect. Dis.* **59**, 258.
Olitzki, L., Koch, P. K. (1945) *J. Immunol.* **50**, 229.
— (1948) *Bact. Rev.* **12**, 149.
Oswald, N. C., Harold, J. T., Martin, W. J. (1953) *Lancet*, ii, 639.
Proetz, A. W. (1941) Essays on the Applied Physiology of the Nose. St. Louis.
Rake, G. (1935) *Proc. Soc. exp. Biol., N.Y.* **32**, 1523.
Registrar-General (1951) Statistical Review for 1949. H.M. Stationery Office.
Reid, L. McA. (1954) *Lancet*, i, 275.
Rosher, A. B. (1939) *Rep. publ. Hlth med. Subj., Lond.* no. **90**, p. 107.
Sindbjerg-Hansen, V. (1943) Studier over den infektionsfremmende virkning af mucin paa svagt patogene bakterier. Thesis, Copenhagen.
Smith, H. (1950) *Biochem. J.* **46**, 352.
— (1953) *Proc. R. Soc. Med.* **46**, 787.
Smith, W., Andrewes, C. H., Laidlaw, P. P. (1933) *Lancet*, ii, 66.
Stuart-Harris, C. H. (1953) Influenza. London.
— Pownall, M., Scothorne, C. M., Franks, Z. (1953) *Quart. J. Med.* **22**, 121.
Taylor, R. M. (1949) *Amer. J. publ. Hlth*, **39**, 171.
Véghelyi, P. V., Kemény, T. T., Sós, J. (1950a) *Amer. J. Dis. Child.* **79**, 65, 846.
— — Pozsonyi, J., Sos, J. (1950b) *Ibid*, **80**, 390.
Wheeler, A. H., Nungester, W. J. (1942) *Science*, **96**, 92.

"In increasing measure . . those who undertake institutional research are realizing that they see the later stages of diseases, and they now seek from general practitioners information as to how these diseases begin. It is hoped that important advances in medicine will come from a fuller understanding of this field, in which 20,000 general practitioners are daily at work, and means must be found of exploring this source of clinical material. This is the challenge that the whole medical profession must meet. Neither the hospital worker nor the general practitioner can carry out this work alone. The hospital worker, trained in a more impersonal world, lacks experience in handling people in their own surroundings and may not easily adjust himself to the different methods of estimation and assessment which are necessary in dealing with unselected human material. The general practitioner may lack training in the scientific method and approach, for he has little opportunity to develop it. He must be encouraged to record accurately and quickly and to draw from his records conclusions which are uninfluenced by personal bias and which will stand up to objective scrutiny and criticism by other workers. The techniques of record-keeping, mechanical analysis and sorting, group study, and all other useful methods developed by other research workers must be applied to the problems of general practice. The research organization of the College may in future come to act as a catalyst in accelerating these evolutionary processes, of which the beginnings have come to light in the past year; and it may be that the newly formed Clinical Research Board of the Medical Research Council will make it possible for a research worker to make a career in general practice which is equal in opportunity to that in any institutional field."—College of General Practitioners, Research Newsletter no. 2. *Practitioner*, February, 1954, p. 197.

PATHOLOGY OF CHRONIC BRONCHITIS *

LYNNE MCA. REID
M.B. Melb., M.R.C.P., M.R.A.C.P.
RESEARCH ASSISTANT, BROMPTON HOSPITAL, LONDON

With illustrations on coloured plate

THOUGH various pulmonary changes associated with chronic bronchitis have been described, they have not always been satisfactorily correlated with the natural history of the disease. The histological material on which this paper is based was derived from patients with chronic bronchitis at different stages of severity. In mild cases the principal change found was in the bronchi, where there was hypertrophy of the mucus-secreting elements, while in advanced cases additional pathological changes were irregularly distributed in the bronchioles and alveoli of the primary and secondary lobules. As is well known, chronic bronchitis may remain mild for many years, causing no disability.

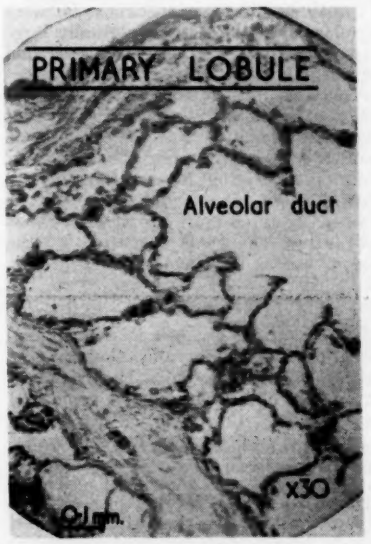


Fig. 1—The primary lobule consists of an alveolar duct and the alveoli it supplies. This lobule is enclosed in a black rectangle in fig. 2.

Material and Methods of Examination

Material

Most of the material was taken at necropsy from 16 patients known to have had chronic bronchitis. 13 of these were certified as dying from bronchitis, with or without the added diagnosis of emphysema, while the other 3 died from a non-respiratory cause. To obtain further examples of the early stages of the disease, biopsies of the mucosa of the bronchi were taken at bronchoscopy from 6 patients with chronic bronchitis. Pneumonectomy specimens were examined from a further 8 patients who suffered from both bronchial carcinoma and chronic bronchitis. For comparison with normal structure, material was examined from necropsy and operation specimens of 10 patients who had no history of chronic bronchitis.

Methods of Examination

Two features of the bronchi were particularly studied: the small diverticula often seen in the walls of the bronchi were studied by serial sections, and the mucus-secreting glands and goblet cells were studied in sections stained by the periodic-acid-Schiff method in order to identify the mucus. Examination of the smaller structures in the peripheral part of the lung involved two difficulties. Firstly, bronchioles become so fine that they cannot be identified and traced by macroscopic dissection, and microscopic methods must be used. Secondly, routine single sections are inadequate for tracing the relations between a bronchiole and its alveoli, because the bronchioles do not necessarily supply the alveoli adjacent to them. Both these difficulties are increased when the normal pattern is disorganised by chronic bronchitis. Therefore, though the typical changes can be assessed by looking at single sections from random blocks, serial sections of the secondary lobules are necessary for a comprehensive study of a bronchiolar pathway. From the lungs obtained at the 16 necropsies a total of 225 blocks were examined. 14 blocks taken from 10 of the cases were sectioned serially. As the sections were 10 μ thick, 100 of them represented 1 mm. of lung. The routine practice was to stain every third by the Verhoeff-van-Gieson method in order to show muscle and elastic fibres. Intervening slides were stained to show special features such as mucus and fibrin.

* Based on a paper read before the Thoracic Society on July 18, 1953, at Oxford.

Normal Anatomy †

The primary lobule is defined as an alveolar duct and the alveoli it supplies (fig. 1). It is approximately spherical and only 1–5 mm. in diameter. Between 50 and 150 of these primary lobules are clustered together to form the secondary lobule (fig. 2). (The black rectangle in this illustration encloses the primary lobule illustrated in fig. 1.) These secondary lobules are demarcated by connective-tissue septa or by pleura. They are approximately spherical and measure 1–3 c.cm. Incomplete septa traverse the lobules and in them veins and lymphatics pass to its periphery. The bronchiole, with its accompanying branch of the pulmonary artery, passes down the centre of the secondary lobule and divides five or six times before giving rise to respiratory bronchioles. These are bronchioles into whose walls alveoli open directly, and they divide once or twice before they form alveolar ducts. The term peripheral when applied to a bronchiole signifies its position in the terminal part of an air-passage. In this sense, peripheral bronchioles occur throughout the substance of the lung.

Pathological Changes

It is convenient to describe the early and advanced stages separately, though lesions of differing age and severity may be found in different areas of the same lung.

Changes in Early Cases

The principal feature is hypertrophy of the mucus-secreting elements, which is corroborated by the excess of mucus in the air-passages. In sections stained by the periodic-acid-Schiff method, there is an obvious increase in the number of goblet cells. They are present in large numbers even in the bronchioles where normally they are scarce. The mucous glands, which are confined to the

† This account of the normal anatomy of the lobule is based on the description by Miller (1947) and on personal observation.

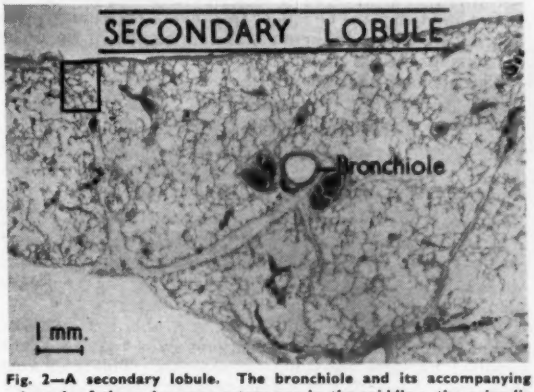


Fig. 2—A secondary lobule. The bronchiole and its accompanying branch of the pulmonary artery are in the middle; the veins lie at the edge in the septa which demarcate the lobule.

bronchi, also show hypertrophy: their ducts are often dilated; and on bronchography this gives the appearance of diverticulosis so often seen in bronchograms of patients with chronic bronchitis (Reid 1952). There is usually œdema of the bronchial wall with swelling of the basement membrane and also some infiltration with small round cells.

Changes in Advanced Cases

The changes in the bronchi are the same as those described in the early stage, though in fatal cases there may also be acute inflammation associated with terminal infection. The following are the additional appearances found in the bronchioles:

Hypertrophy of goblet cells.
Purulent bronchiolitis.
Formation of abscess cavities.
Obliteration of the lumen.
Dilatation, diffuse or localised (with or without stenosis, partial or complete).

Hypertrophy of goblet cells and purulent bronchiolitis are superficial; and, as the bronchioles are anatomically intact, resolution is not precluded. The other lesions cause serious disorganisation of the bronchioles and consequently there are more likely to be permanent effects on function.

Fig. 3 illustrates an increase in the number of *goblet cells* in the peripheral bronchiole of a patient with chronic bronchitis. In a similar section of a normal bronchiole only an occasional goblet cell would be seen.

In *purulent bronchiolitis* (not illustrated) the walls of the bronchioles are infiltrated with acute inflammatory cells and the lumen is plugged with pus and mucus. The epithelium is often denuded, and fibrous tissue may grow into the lumen, suggesting early organisation.

Abscesses frequently occur in small bronchioles and can sometimes be seen by the naked eye. More often, however, they are small and only by studying serial sections can the bronchioles leading to them be demonstrated; the abscesses may be no more than 1 mm. in diameter (fig. 4). The bronchioles are thus cut off from their peripheral branches and alveoli, with resulting derangement of function.

Obliteration of the lumen can sometimes be recognised macroscopically if the remnant of the bronchiole is visible as a nodule in an area of emphysema. Finer bronchioles cannot be recognised except by studying serial sections or using special stains to identify their remannts, such as bundles of muscle-fibres (fig. 5).

Dilatation of small bronchioles is often encountered. It may involve one or many bronchiolar pathways and in any one bronchiole it may be diffuse or localised. Dilatation may occur beyond a constriction in a bronchiole which yet remains patent. Occasionally such narrowing may completely obliterate the bronchiole, whose distal part is then isolated as a cyst (fig. 6). Though the lumen in the cyst is no longer continuous proximally with the lumen of the bronchiole, it can be shown by serial sections to be its remnant.

The alveolar changes are:

Pneumonia.
Organisation of pneumonic exudate.
Œdema.
Emphysema.
Collapse.
Mucus and pus lying in alveolar spaces.

They are largely the result of disease in the bronchioles. Again the lesions are generally very small and patches of *pneumonia* are often only a few millimetres in diameter. On occasion, *organisation of pneumonic exudate takes place*, with consequent contraction (fig. 7).

Patches of collapse usually measure about 0·5 cm. in diameter (fig. 9), but serial sections show that they are supplied by large proximal bronchioles. This indicates they are the remains of a considerably larger volume of normal functioning lung. Fig. 14 illustrates a large bronchiole which ends blindly in an insignificant nodule of collapsed lung, 0·5 cm. in diameter.

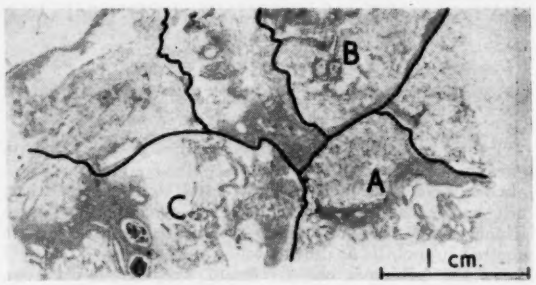


Fig. 11—One of the sections prepared from a block of tissue cut from the lung illustrated in fig. 10.

Recognition of *emphysema* in these specimens is based on the simple pathological criterion of abnormally large air-spaces. Full consideration of emphysema is beyond the scope of the present paper, but the illustrations demonstrate three possible mechanisms for its development: (1) disruption of alveoli; (2) dilatation and cyst formation in bronchiolar remnants, and (3) emphysema compensatory to disease in neighbouring lobules.

Mucus is sometimes seen lying free in the alveolar spaces (fig. 8), but, as there are no goblet cells at this level, it must have been secreted more proximally. That this is not a post-mortem change is suggested by the occasional presence of mucus in alveolar phagocytes.

SERIAL SECTIONS

The interplay of these various changes is well demonstrated in serial sections. The diagrams illustrated in figs. 12–14 were prepared from sections cut from the lungs of a patient whose clinical history is typical of chronic bronchitis.

He was a clerk, aged 64, who had complained of a winter cough for many years. For six years before his death he was aware of increasing breathlessness, and during each of the last three years he had been in hospital several times with an exacerbation of his symptoms. Such an episode finally resulted in his death.

The series illustrated was prepared from a block taken from the area of lung illustrated in fig. 10, which shows the apical segment of the right lower lobe, cut horizon-

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. REID

Fig. 3—Hypertrophy of goblet cells. Mucus is stained red (periodic-acid-Schiff). A similar section of a normal bronchiole would show only an occasional goblet cell. (× 70.)

Fig. 4—In the lower part of this section is a small abscess-wall stained blue. The pus in this cavity and in neighbouring alveoli is purplish. (Periodic-acid-Schiff. × 35.)

Fig. 5—Passing obliquely across the lower part of this section are bundles of muscle-fibres (brown). This is the remnant of a bronchiole whose lumen has been obliterated proximally by fibrous tissue. (Van Gieson: muscle-fibres brown; fibrous tissue red. × 140.)

Fig. 6—Dilatation. The bronchiole on the left expands into the sac seen on the right. This is the bronchiole illustrated in fig. 12. (Van Gieson. × 70.)

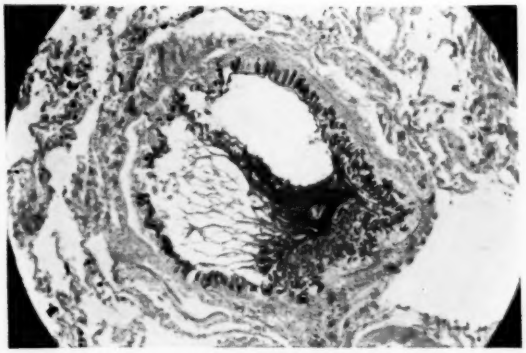
Fig. 7—Organising pneumonic exudate. Fibrous tissue invading exudate in alveolar spaces; elastic fibres in alveolar wall. (Verhoeff-van-Gieson: elastic fibres black, fibrous tissue red. × 140.)

Fig. 8—Plug of mucus protruding from the opening of bronchiole. (Periodic-acid-Schiff. × 140.)

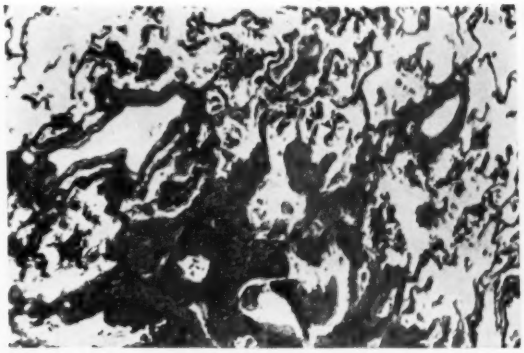
Fig. 9—Area of collapse showing many elastic fibres—the remnants of alveolar walls. (Verhoeff-van-Gieson. × 280.)

Fig. 10—Transverse section through apical segment of right lower lobe. Areas of emphysema and nodules of collapse.

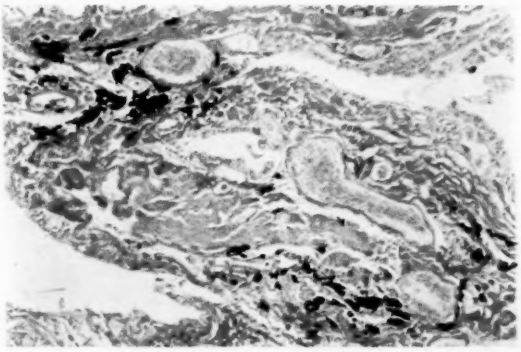
DR. REID: PATHOLOGY OF CHRONIC BRONCHITIS



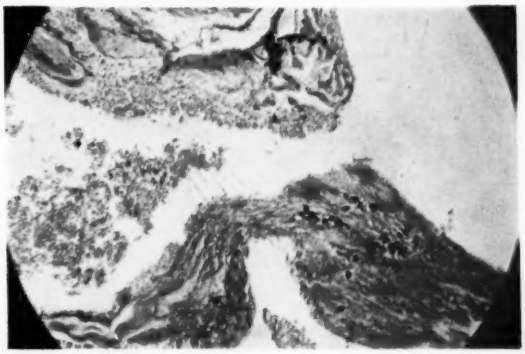
3



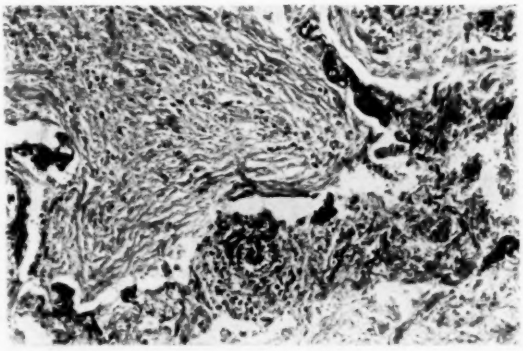
4



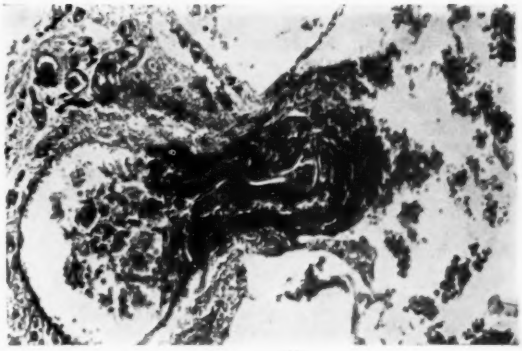
5



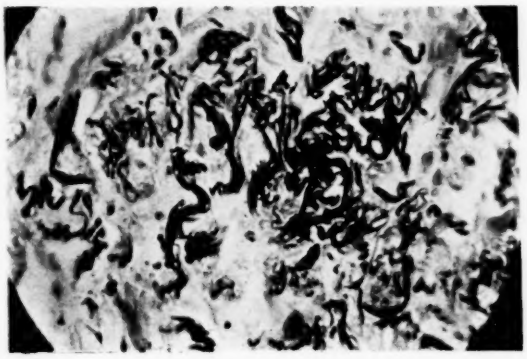
6



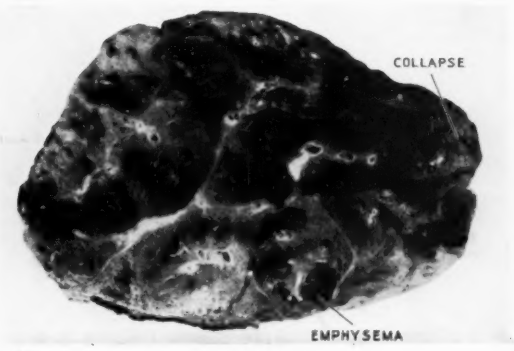
7



8

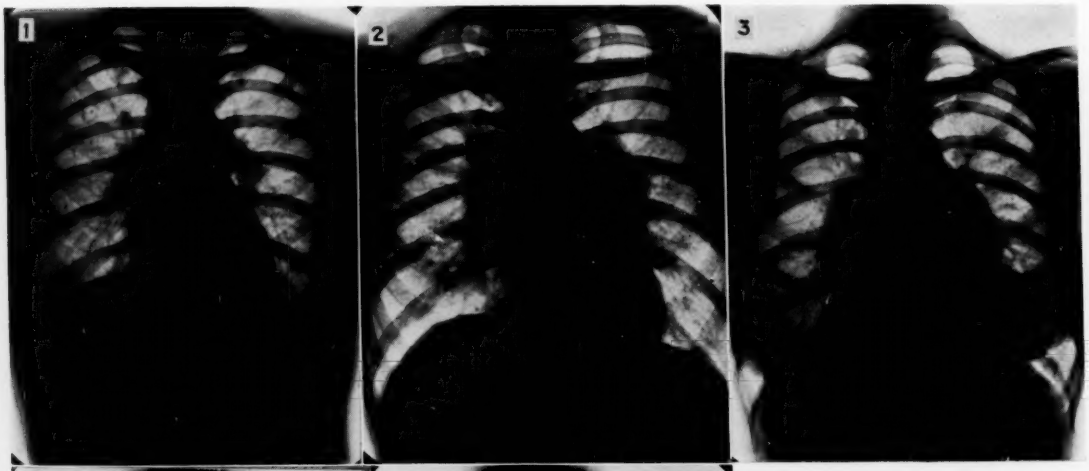


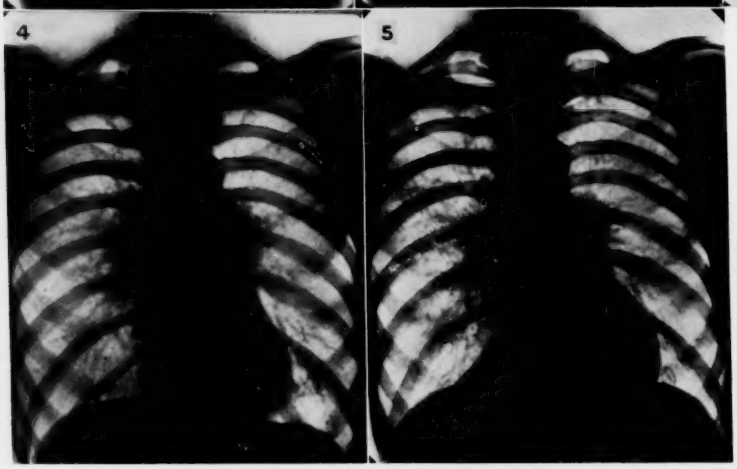
9



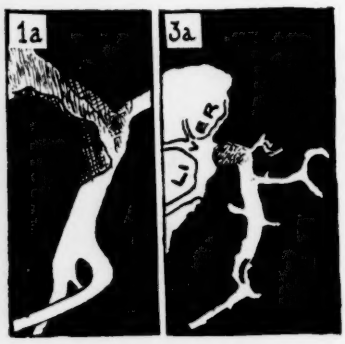
10

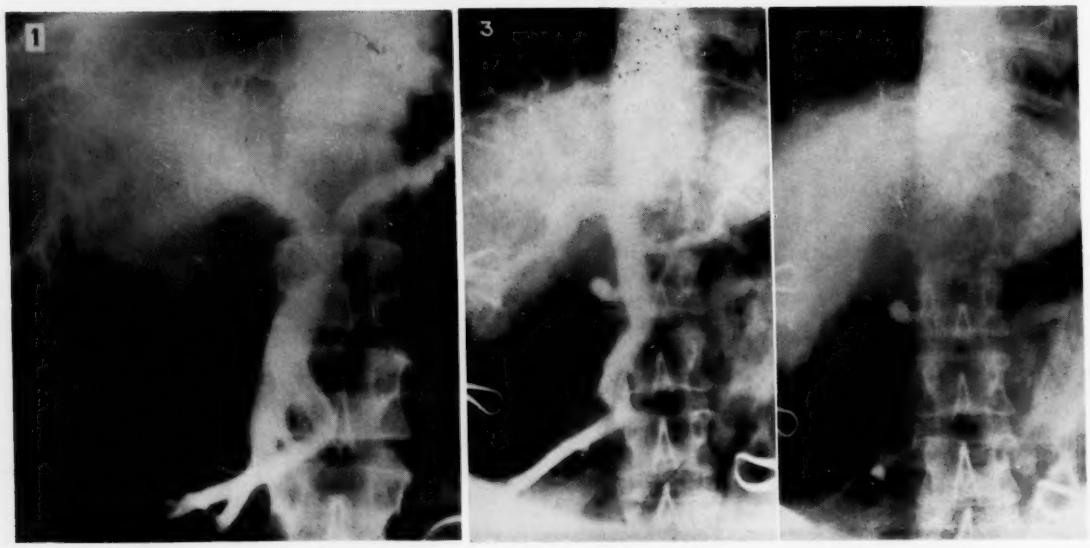
DRS. WYNN-WILLIAMS AND EDWARDS: BILATERAL HILAR LYMPHADENOPATHY





MR. HUNT & DR. WHITTARD: PORTAL THROMBOSIS





tally. The block included one of several nodules which could be palpated through the pleura. Fig. 11 shows the first of 250 serial sections cut from the block which was 3 mm. thick. It is divided into five areas and each, except that marked C, is a secondary lobule. Area C, although of similar size is, in fact, the remains of several secondary lobules. The pattern of branching of the bronchioles A, B, and C, is shown in figs. 12–14, which were prepared from a study of the entire series. About a third of the way through the block, the secondary lobule A shows a well-defined space about 0·75 cm. in diameter. This particular space, at its point of communication with its parent bronchiole is illustrated in fig. 6. A side branch proximal to this expansion ends blindly in collapsed lung. Fig. 13 shows the pattern of the bronchioles in secondary lobule B, and includes a diagram which represents the same length of normal bronchiole. Both were prepared from serial sections, and the difference between them demonstrates the loss of the normal pattern in disease.

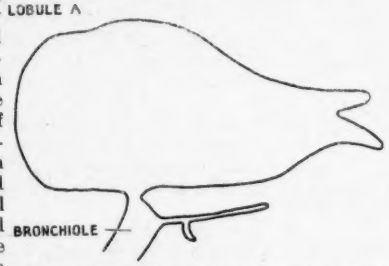


Fig. 12—Diagram of bronchiole in lobule A which expands into a cavity (illustrated in fig. 6).

The bronchiolar disorganisation in lobule C is represented in fig. 14. This area includes the palpable nodule selected for section. Histologically the most obvious feature in this area is a large space which was identified as the supplying bronchiole by the even distribution of muscle bundles in its wall, indicating that it arose from bronchiolar dilatation (X in fig. 14). The remnants of four side bronchioles (Y in fig. 14) were surrounded by emphysema and were occluded by pus and finally by fibrous tissue. The nodule consisted of collapsed lung, and cartilage could be identified in the supplying airway within 0·5 cm. of the pleura. Normally there is no cartilage within several centimetres of the pleura, thus emphasising the large volume of healthy lung which the nodule represents.

Discussion

Hypertrophy of the mucus-secreting elements is the principal change in the early phase of chronic bronchitis, which is consistent with the observation that excess of mucoid sputum is a characteristic clinical feature in most mild cases. The clinical survey of patients with chronic bronchitis (Oswald et al. 1953) suggests this hypersecretion of mucus can be caused by a variety of agents. Excess of mucus in the air-passages may cause impairment of respiration, particularly if it involves peripheral bronchioles. Furthermore, it may provide a mechanism for the spread of infection along the airways towards the vital peripheral units (fig. 9). This emphasis on hypersecretion as a fundamental disturbance is not intended to detract from the rôle of infection in chronic bronchitis, but rather to separate the factors which may play a part in the clinical course of the disease. The acute inflammatory changes already described in advanced cases are evidence of the presence of infection, and the consequent disorganisation of secondary lobules is sufficient indication of its importance in the progression of the disease.

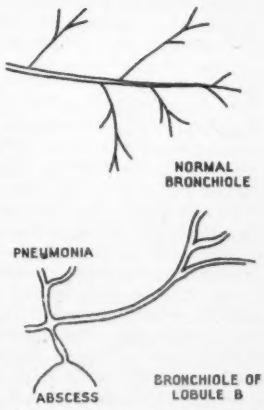


Fig. 13—Shows the pattern of branching of the bronchiole supplying lobule B. Accompanying diagram of the same length of normal bronchiole.

In necropsy specimens there is a graduation of change from zones of acute inflammation, which are doubtless terminal, to fibrosis and scarring, which suggest older and more permanent disturbance. As the final illness is only one in a series of many similar attacks, the manifestations of acute inflammation doubtless illustrate changes which have recurred over many years. While some may have been transient and resolved uneventfully, others have clearly left their legacy of scarring. Some of the small scars represent an originally large volume of normal functional lung; but, as there is no great reduction in the total size of the lungs, compensatory mechanical changes must have occurred in the neighbouring lobules to maintain the original volume. The final appearance of the lung therefore depends on the interplay of several factors—the acute disease, the scarring which may result from its healing, and the compensatory changes which this induces.

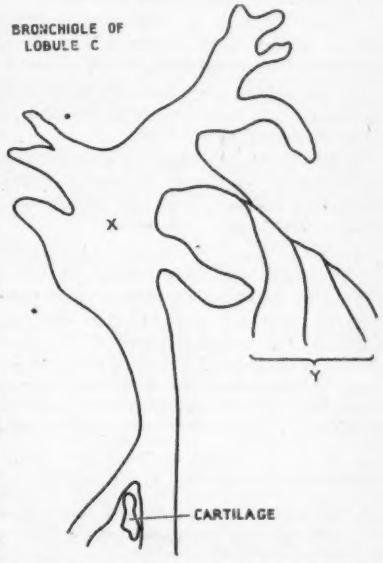


Fig. 14—Diagram of area C. A piece of cartilage can be identified within a few millimetres of the pleura. In normal lung several centimetres would intervene.

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. WYNN-WILLIAMS AND DR. EDWARDS

Fig. 1—Bilateral hilar lymphadenopathy.

Fig. 2—Massive enlargement of hilar lymph-glands.

Fig. 3—Bilateral hilar enlargement, with fine nodulation over middle zone of left lung.

Fig. 4 (case 5)—Bilateral hilar adenopathy (July 29, 1950).

Fig. 5 (case 5)—Recurrence of bilateral hilar adenopathy, associated with fine nodular shadows throughout both lung fields (March 6, 1952).

MR. HUNT AND DR. WHITTARD

Fig. 1—Case 1 : portal phlebogram, taken at operation, showing thrombosis within portal vein. Tracing (fig. 1a) shows extent of thrombus (hatched area) as found at operation.

In this case, and in the others illustrated, the patient's spleen had been removed previously.

Fig. 3—Portal phlebograms taken at operation. Tracing (fig. 3a) shows extent of thrombus (hatched area) as found at operation ; shadow of thrombus is just visible on close study in first exposure (exposures 0·6 sec. each at interval of 1 sec., normal speed of flow).

The frequency or relative importance of the various pathological changes is difficult to assess. Involvement of the lungs is usually diffuse; for, in patients dying from chronic bronchitis and emphysema there is at least some change in all lobes; but the changes are not uniform. This patchy distribution of the histological changes is reflected in the variation often seen in the macroscopic appearances of one specimen of sputum from a patient with chronic bronchitis, and in the bacteria that can be cultured from it (May 1953).

In this paper I have concentrated on the pathological changes in the bronchial tree. Other aspects, in particular the changes in the blood-vessels and the occurrence of emphysema, will be considered separately.

The full importance and extent of the disease in the secondary lobules cannot be assessed either from naked-eye examination of specimens or from microscopic examination of single sections. By the use of serial sections, however, a bronchiole can be related to its alveoli, and together these can be considered a functional unit. The significance of the variety of lesions described here must be measured by the disturbance and destruction of these units of respiration. With many of the acute changes, the functional disturbance may be temporary; but in others it is irreversible and permanent. The extent of the changes and the speed with which they take place are probably the factors which influence the rate of development of symptoms. Though each clinical attack may have little immediate effect, the cumulative effect of many such incidents can be great. The small size of the individual lesions probably accounts for the characteristically insidious progress of chronic bronchitis; but their total number makes the final incapacity no less certain or severe.

Summary

1. An attempt is made to correlate the morbid anatomy of chronic bronchitis with the characteristically insidious but progressive course of the disease.

2. To include early and late lesions, necropsy, biopsy, and operation specimens were studied, and normal lungs were examined as controls.

3. Study of the peripheral part of the lung necessitates examination of serial sections of the primary and secondary lobules. The normal anatomy of these units is also described.

4. In mild cases of chronic bronchitis the main feature to be noted was hypertrophy of the mucus-secreting elements—namely, the mucous glands and goblet cells.

5. In advanced cases, further significant lesions were found in the terminal parts of the air-passages. They caused serious disturbance of the normal pattern of the lung. Though the size of the individual lesions may be small, their effect is cumulative; and by virtue of their location they give rise to severe functional disability.

I am most grateful to Dr. J. W. Clegg, director of the department of pathology at the Brompton Hospital, where this work was done, and to Dr. N. C. Oswald for his unfailing help and enthusiasm. I am also indebted to Mr. D. Kemp, of the photography department of the Institute of Diseases of the Chest, for the illustrations.

REFERENCES

May, J. R. (1953) *Lancet*, ii, 534.
Miller, W. S. (1947) The Lung. Springfield, Ill.
Oswald, N. C., Harold, J. T., Martin, W. J. (1953) *Lancet*, ii, 639.
Reid, L. McA. (1952) Demonstration at the 46th annual general meeting of the Association of Physicians of Great Britain and Ireland.

"... when people want to understand they do not mind a truckle-bed of hard (if comprehensible) facts, but they object to a fakir's bed of intellectual spikes."—RITCHIE CALDER, *Times*, Jan. 20, 1954, p. 7.

BILATERAL HILAR LYMPHADENOPATHY
ITS ASSOCIATION WITH ERYTHEMA NODOSUM

N. WYNN-WILLIAMS
M.B. Lond.
CHEST PHYSICIAN, BEDFORD GENERAL HOSPITAL

GORDON F. EDWARDS
M.B.E., M.B. Lond., M.R.C.P.
SENIOR CHEST PHYSICIAN, LEEDS; LATE ASSISTANT CHEST PHYSICIAN, BEDFORD

With illustrations on plate

BILATERAL enlargement of the hilar lymph-glands, often accompanied by erythema nodosum, without any obvious cause or definite pulmonary abnormality, has been reported extensively in recent years from Scandinavia (Löfgren and Lundbäck 1949, 1952), where it is considered to be relatively common. The work of Chaves and Abeles (1953), however, suggests that it occurs less frequently in America, and few reports have been published in this country. Dunner and Hermon (1952) have reported 6 cases associated with erythema nodosum and cite 14 other similar cases from the English literature, and 8 in America found in 100 consecutive cases of erythema nodosum.

We report here those cases of bilateral hilar gland enlargement, with or without erythema nodosum, coming under our observation in Bedford in six and a half years. Brief accounts are also given of those cases, seen during the same period, of erythema nodosum without bilateral hilar adenopathy, and also of those patients with presumed sarcoidosis, in order that the relationship between the three conditions, if any, may be discussed.

Material

The cases described here all came under observation at the Bedford Chest Clinic or General Hospital between January, 1947, and June, 1953, but 2 patients had been under medical care previously. The cases were drawn from Bedford Town and North Bedfordshire, a total population of about 150,000. The total number of patients coming under radiological survey in the Bedford Chest Clinic for all purposes steadily increased from the beginning of 1947 to the end of 1949. After this period the numbers remained constant until the end of 1952, when there was a further increase in attendances. 17 cases of bilateral hilar lymphadenopathy were seen during the period under review, of which 12 were associated with erythema nodosum. During the same period 15 patients were seen and considered to be examples of sarcoidosis. Of these, only 2 gave a history of erythema nodosum at some time. In addition 49 patients were seen with erythema nodosum without hilar adenopathy.

All of the patients with bilateral hilar adenopathy or presumptive sarcoidosis were fully investigated by tomography, slit-lamp examination of the eyes, complete blood-counts, estimation of serum-protein levels, erythrocyte-sedimentation rates (E.S.R.), Wassermann reactions, and repeated cultures of sputum or of laryngeal swabs for tubercle bacilli. Tuberculin tests were made intradermally, with Old Tuberculin (O.T.) only during its month of issue, but in young children tuberculin-jelly tests were made with Allen & Hanburys' 'Tuberculin Diagnostic Jelly.' Positive reactions to 1/10,000 O.T. or tuberculin jelly have arbitrarily been judged as showing high sensitivity, whereas positivity to 1/1000 O.T. and 1/100 O.T. have been termed moderate and low sensitivity respectively.

Bilateral Hilar Lymphadenopathy

17 patients were seen with this syndrome, of whom 11 were females. 14 were over the age of thirty and only 1 under the age of twenty. The first case was observed in

1949, and the numbers slowly increased: 2 were seen in 1950, 3 in 1951, 6 in 1952, and 5 in the first half of 1953. The accompanying table shows the findings in this group. Intradermal tuberculin testing showed 1 positive to 1/10,000 O.T., 1 positive to 1/1000 O.T., 11 positive to 1/100 O.T., and 4 negative to 1/100 O.T. Erythema nodosum developed and led to examination in 12 (10 women); 3 were found by mass miniature radiography (M.M.R.) but were symptom-free and with no history of erythema nodosum; 1 was referred because of symptoms of malaise, loss of weight, and facial palsy; and 1 because of recurrent iridocyclitis. There was no seasonal incidence; the cases arose equally throughout the year.

14 patients had symptoms, which, in order of frequency, were erythema nodosum, polyarthritis, lassitude, dyspnœa, malaise, and loss of weight. These symptoms had been present from two to twelve weeks before discovery. 7 patients developed polyarthritis, usually from four to six weeks before the onset of erythema nodosum, after which the arthritis rapidly and completely resolved. The joints affected were always the knees and ankles, and occasionally the wrists and elbows in addition. The longest period such swelling persisted was eight weeks. In the 12 patients with erythema nodosum the symptoms rapidly disappeared from three to six weeks after the resolution of the erythema nodosum. The 3 symptomless patients with adenopathy discovered by M.M.R. remained symptom-free, and in the remaining 2 patients symptoms persisted for one and two years.

In every instance the diagnosis of enlarged hilar glands was made radiologically. The criteria used were that enlargement must be well-marked and undoubted (fig. 1), that definite lobulation of the hilar shadows was present, and that independent opinion also assessed the hila as enlarged. Moreover, in 5 patients it was possible to obtain a chest radiograph taken before the onset of the hilar adenopathy, and in 9 patients the lapse of time showed regression of the shadows, which endorsed the diagnosis. Tomography was used in all the cases, but the evidence provided by this method is not sufficiently unequivocal to be used as proof of glandular enlargement. It was therefore only used to confirm the diagnosis. Fig. 2 shows the considerable degree of enlargement that may be attained.

The glandular enlargement lasted for variable periods. In 5 cases it returned to normal within six months, in 3 it was smaller in six months and normal in twelve months, and in 2 cases it has been under observation up to nine months without change. All these patients presented with erythema nodosum. Another patient has been observed for twenty-four months, during which time the glands have become smaller though still enlarged. In 1 further case enlargement of the hilar glands, which were accompanied by normal lung fields, disappeared within six months, but a year later the hilar shadows again enlarged, and the lung fields showed generalised fine nodulation throughout. This second episode was followed again by complete radiological resolution in just under a year, and so far there has been no recurrence. These last 2 patients presented with symptoms but without erythema nodosum. The remaining 5 patients have been under observation for less than six months, and there has been no change in the glandular enlargement.

In 6 of these 17 cases minimal nodular shadows (fig. 3) were seen in the lung fields at the time of the glandular enlargement; in 4 of the 6 there was associated erythema nodosum. These changes extended over about the equivalent of a third of a lung field, and might well have been judged as prominent vascular markings, apart from their later disappearance pari passu with the enlarged hilar shadows. Tomography confirmed these changes in all the cases.

In the whole group of patients, blood-counts, Wassermann and Kahn reactions, radiographs of the hands and feet, and sputum and laryngeal swab cultures showed no gross abnormalities. The E.S.R. (Westergren) showed the expected acceleration, when associated with erythema nodosum, of about 40–50 mm. in the first hour. The serum-protein levels were constantly at the higher limits of normal readings, the globulin fraction tending to be the more increased, being more than 3 g. per 100 ml. in 5 patients. Two patients had recurrent iridocyclitis, and 2 others had chronic angular conjunctivitis.

Biopsy of the superficial lymph-nodes, which were present in only 3 patients, was not done, because these patients, being relatively fit, refused to submit to this procedure.

BRIEF CASE-HISTORIES

Case 1.—Male aged 43. Reported with lassitude, slight loss of weight, conjunctivitis, and pyrexia (100°F) for a month and erythema nodosum for ten days. Radiography showed bilateral hilar gland enlargement, tuberculin test 1/100 positive, plasma-proteins 8 g. per 100 ml., serum-globulin 4 g. per 100 ml., E.S.R. 20 mm. at one hour. Six months later radiograph normal.

Case 2.—Female aged 39. Mild lassitude for six weeks, and erythema nodosum for ten days. Radiography showed bilateral hilar lymphadenopathy. Tuberculin test 1/100 positive, plasma-proteins 7·6 g. per 100 ml., serum-globulin 4·6 g., E.S.R. 102 mm. at one hour. Three months later radiograph normal and E.S.R. 10 mm. Two months after this developed another attack of erythema nodosum; serum-proteins now 11·6 g. per 100 ml. and serum-globulin 6·2 g. Radiograph normal.

Case 3.—Female aged 52. Six weeks previously had developed polyarthritis affecting knees, ankles, and wrists, and three weeks later erythema nodosum. Radiography showed bilateral hilar adenopathy. Tuberculin test 1/1000 positive, plasma-proteins 7·5 g. per 100 ml., serum-globulin 2·5 g. Polyarthritis completely cleared up within three weeks of the onset of erythema nodosum.

Case 4.—Female aged 46. Three months ago had hysterectomy for uterine fibroids. Eight weeks ago developed lassitude, dyspnœa, and cough; two weeks later arthritis of ankles, knees, wrists, and elbows; and three weeks ago erythema

COMPARISON OF CLINICAL FEATURES OF BILATERAL HILAR ADENOPATHY WITH THOSE OF ERYTHEMA NODOSUM AND OF CLINICAL SARCOIDOSIS

Condition	No. of cases	Sex		Age-groups (yr.)			Tuberculin status				Associated changes					
		M	F	1–20	21–30	31–60	High	Mod. or low	Neg.	Not tested	Tuber-culosis	Eryth. nodosum	Poly-arthritis	Ocular signs	Other glands enlarged	Skin changes
Erythema nodosum alone	49	9	40	24	17	8	26	9	9	5	22	49	..	..	..	..
Bilat. hilar adeno-pathy with ery-thema nodosum ..	12	2	10	..	..	12	..	9	3	..	..	12	7	2	1	..
Bilat. hilar adeno-pathy without ery-thema nodosum ..	5	4	1	1	2	2	1	3	1	..	..	..	..	2	2	..
Clinical sarcoidosis	15	10	5	..	1	14	1	10	4	..	..	2	..	4	7	1

nodosum and iridocyclitis. Radiography showed bilateral hilar gland enlargement and fine nodulation in left middle zone (fig. 3). E.S.R. 48 mm. at one hour, tuberculin test 1/100 negative, plasma-proteins 7·5 g. per 100 ml., serum-globulin 2·0 g. Three months later radiography showed considerable reduction in size of hilar adenopathy.

Case 5.—Male aged 35. April, 1950, right facial palsy; May, left facial palsy with lassitude, loss of weight, and cough. Radiograph showed bilateral enlarged glands (fig. 4). Six months later radiography normal. In 1952 radiography showed both hilar regions again enlarged, with fine nodulation over both lung fields (fig. 5). A year later he was fit and well and radiograph normal.

Sarcoidosis or Presumed Sarcoidosis

This disease may be suspected fairly often, but the usually accepted proof of the condition rests on pathological evidence. This is difficult to obtain in most instances. During the period of this survey 15 patients were observed in whom this diagnosis was made on the clinical evidence available and confirmed histologically in 2 cases. Relevant details are shown in the table. 9 patients had obviously enlarged hilar or mediastinal glands with definite and extensive radiographic pulmonary changes, and 6 had well-marked pulmonary changes only, without hilar gland enlargement. 2 patients were seen in 1947, 2 in 1948, 2 in 1949, 3 in 1950, 1 in 1951, 5 in 1952, and none in the first half of 1953. Of the 15 patients 10 were males. 1 patient was under the age of thirty, and the remaining 14 were between thirty and fifty. 2 were picked up symptomless by M.M.R.; 5 others were found by M.M.R. but had symptoms; and the remainder were referred because of general ill health.

The symptoms noted in order of frequency were dyspnœa, cough with sputum, loss of weight, lassitude, and malaise, which had been present for months or even years and persisted throughout the observation period of one to five years. The tuberculin reaction was negative to 1/100 O.T. in 4 patients, all of whom showed hilar adenopathy and lung changes; 7 were positive to 1/100 O.T.; 3 were positive to 1/1000 O.T., and 1 was positive to 1/10,000 O.T. 1 man was originally referred with erythema nodosum and a radiograph which showed miliary-type pulmonary mottling with bilaterally enlarged hilar glands, and 1 woman had had erythema nodosum in 1943 before coming under observation here in 1951. Both these patients exhibited massively enlarged hilar glands with well-marked pulmonary changes.

The diagnosis was proven histologically after necropsy in the only 2 fatal cases in the whole series, in 1 of which the diagnosis had been confirmed in life by biopsy of a superficial lymph-gland and a skin nodule. In the remaining 13 patients diagnosis was made on clinical grounds by exclusion. Full hospital investigation was done in 6 patients (3 in teaching hospitals). Other investigations which showed confirmatory evidence were ocular abnormalities of the uveal tract in 4 patients, other enlarged lymph-glands in 7 (of whom 2 also had an enlarged spleen), skin changes in 1, lack of response to streptomycin in 4, and osteitis multiplex cystica in 1.

Follow-up of these 15 patients for an average period of three years showed complete resolution of all the shadows in 1 patient, appreciable resolution in 2, and no change or an increase in the remaining 12. One patient failed to attend for follow-up examination, being free of symptoms still three years after the original abnormal M.M.R.

Erythema Nodosum without Bilateral Hilar Gland Enlargement

In this group there were 49 patients, of whom 40 were females, and 41 were aged 30 or less. There were 12 in each of the first two decades, and 17 occurred between the ages of twenty-one and thirty. The tuberculin state showed a high sensitivity in 26, of whom 6 were children with positive tuberculin-jelly reactions, and was of moderate or low sensitivity in 9. 9 others were negative to tuberculin, and 5 were not tested, but 4 of these later developed overt tuberculosis.

22 patients had obvious evidence of tuberculosis at their first attendance, or developed the disease within two years; only 1 of these patients was over the age of thirty. 8 patients gave a clear history of a sore throat from ten to twenty days before the onset of the erythema nodosum, and in these the condition is considered to be of streptococcal origin. In the remaining 19 patients no obvious cause was found other than that in 3 patients the condition developed in the first three months of pregnancy; their average age was greater than that of the other patients. Of these 19 patients the Mantoux status was determined in 18; 13 showed a negative or only moderate sensitivity. 5 patients had had more than one attack of erythema nodosum; 2 were pregnant.

Discussion

The ætiology of bilateral hilar adenopathy is uncertain. It has been adjudged tuberculous by Ustvedt (1949), but Burger and Küthe (1939) suggested that it was due to sarcoidosis, which they regarded as a special form of tuberculosis. Löfgren and Lundbäck (1952), however, thought that this syndrome was due in most cases to the primary stage of pulmonary sarcoidosis; out of the last 49 cases coming under their observation they found in 23 histological evidence of sarcoidosis, which they considered to be an independent infectious disease unassociated or unrelated to tuberculosis. Scadding (1952) also suggested that these cases had a relationship to sarcoidosis.

Our material demonstrates certain facts which have some ætiological significance. The age and tuberculin status of the patients with bilateral hilar adenopathy are broadly similar to those with sarcoidosis. The enlarged glands usually regress more rapidly than is common in sarcoidosis with lung changes, but in some patients histologically confirmed sarcoidosis is known to show hilar adenopathy without lung changes.

The distribution of sarcoidosis is equal between the sexes, and similar to that of hilar adenopathy without erythema nodosum. In the cases of hilar adenopathy there was a preponderance of females, caused by an excess of females in the group accompanied by erythema nodosum. Owing to the frequency with which erythema nodosum occurs in hilar adenopathy it must be presumed that there is some relationship between the two conditions, both of which are probably an allergic response to a sensitising toxin; the frequency with which a transient polyarthritis precedes the development of the erythema nodosum also suggests an allergic manifestation. For this reason all the cases of erythema nodosum seen during the investigation were reviewed for any gross clinical differences. Those with high tuberculin-sensitivity were largely tuberculous in origin; these cases occurred mainly in the patients aged less than twenty and predominantly in females. Those with a negative or a moderate sensitivity to tuberculin included cases associated with sore throats, with bilateral hilar adenopathy, or with sarcoidosis, and some without obvious cause; they occurred in more of the older patients and predominantly in females. It thus appears that erythema nodosum occurs much more commonly in females, and adjustment on this basis shows a sex-distribution of hilar adenopathy very similar to that of sarcoidosis.

Other facts in the personal history of some of the patients with simple hilar adenopathy may be of some importance. 1 patient had transient bilateral facial palsy for which no definite cause was found. This patient had normal lung fields with enlarged hilar glands which regressed completely, only to reappear later in company with changes in the lung fields typical of sarcoidosis.

2 patients with iridocyclitis and 2 with angular conjunctivitis had enlarged hilar glands. A 3rd patient had bilateral hilar lymphadenopathy and, three years later, erythema nodosum in association with the enlarged glands. After a further five years, when first seen by us, there had appeared undoubted massive pulmonary nodulation, which we considered due to sarcoidosis, and the hilar glands were still enlarged. It thus seems possible for bilateral hilar adenopathy to develop into sarcoidosis. Furthermore 6 of the 17 patients had temporary localised changes of doubtful significance in the lung fields.

The evidence suggests the likelihood of a connection between hilar adenopathy and sarcoidosis; hilar adenopathy being a milder or abortive form of sarcoidosis. Unfortunately no histological confirmation has been obtained. The low tuberculin-sensitivity reactions found in hilar adenopathy, even in the presence of erythema nodosum, do not point to tuberculous infection as a cause. Moreover, no new calcification was seen to arise in the hilar regions after resolution of the glands. In view of the suggestion that sarcoidosis is an unusual response to the tubercle bacillus, it is of interest that definite calcification was observed in the radiographs of several patients when first seen with bilateral hilar adenopathy.

Sarcoidosis is usually considered fairly rare; but, if cases are admitted on sound clinical evidence, we think it is relatively common. The recognition that this form of hilar adenopathy is usually caused by sarcoidosis would render the disease almost commonplace and certainly alter our previous conception of its frequency. However, in the absence of any evidence indicating another disease, a benign sarcoidosis is the most likely explanation of most cases of bilaterally enlarged hilar glands, with or without erythema nodosum. It is also possible that sarcoidosis is becoming more common.

Summary

Between January, 1947, and June, 1953, 17 cases of bilateral hilar adenopathy were seen, of which 12 had erythema nodosa and 7 polyarthritis.

Brief notes on 15 cases of sarcoidosis and 49 cases of erythema nodosum are given, and the ætiology of the syndrome is discussed.

It is concluded that bilateral hilar adenopathy is probably caused by the agency responsible for sarcoidosis, and that it and sarcoidosis are relatively common.

We are indebted to Dr. J. H. L. Easton for transferring 4 of the cases of hilar adenopathy to us for observation.

REFERENCES

Burger, G. C. E., Küthe, C. H. J. (1939) *Geneesk. Bl.* **37**, 1.
Chaves, A. D., Abeles, H. (1953) *Amer. Rev. Tuberc.* **67**, 45.
Dunner, L., Hermon, R. (1952) *Brit. med. J.* ii, 1078.
Löfgren, S., Lundbäck, H. (1949) *Nord. Med.* **42**, 1706.
— — (1952) *Acta med. scand.* **142**, 259.
Scadding, J. G. (1952) Diseases of the Chest. London; vol. II, p. 185.
Ustvedt, H. J. (1949) *Acta med. scand.* **132**, 415.

"The situation of any hospital patient can only be understood if three aspects of disease are looked for and evaluated: (1) the structural or physiological disorder responsible for his immediate symptoms; (2) the genetic constitution in so far as its individuality influences the origin and course of the disease; (3) the psycho-social impact of the environment on the patient both as an ætiological agent in the psychosomatic diseases and as a significant factor in the patient's outlook on his own illness. Except for some rare and striking anomalies which are inherited as dominant characters, the only practical approach to medical genetics is by the use of the twin-study technique. This has special potentialities for incorporation into the general activities of a clinical research unit . . ."—Sir MACFARLANE BURNET, F.R.C.P., F.R.S., director of the Walter and Eliza Hall Institute of Medical Research, Melbourne, in his report for 1952–53.

THROMBOSIS OF THE PORTAL VEIN IN CIRRHOSIS HEPATIS

ALAN H. HUNT
D.M., M.Ch. Oxfd, F.R.C.S.
ASSISTANT SURGEON, ST. BARTHOLOMEW'S HOSPITAL, LONDON; SURGEON, THE ROYAL CANCER HOSPITAL

BRIAN R. WHITTARD
M.B. Lond.
RECENTLY HOUSE-SURGEON, ST. BARTHOLOMEW'S HOSPITAL

With illustrations on plate

THROMBOSIS of the portal vein is a complication of portal hypertension that has not yet been placed in perspective in relation to hæmorrhage from gastro-œsophageal varices, to ascites, to coma, or to the sudden deterioration of a patient with cirrhosis of the liver. We here describe briefly 7 cases of cirrhosis in which thrombosis seemed to be directly responsible for a change in the clinical course of the disease.

Case-records

Case 1.—A man aged 26, a machine operator, was first admitted to St. Bartholomew's Hospital on Oct. 23, 1951, when he had a three years' history of splenic anæmia. Two years previously splenectomy had been done elsewhere, and the liver had been proved cirrhotic. Two months before admission he had had a severe hæmorrhage, and a barium swallow had shown extensive œsophageal varices.

On admission his hæmoglobin was 58%, but the liver-function tests were all within normal limits, and the serum-protein level was 7·3 g. per 100 ml. (albumin 5·2 g., globulin 2·1 g.).

Operation.—On Nov. 9, 1951, an end-to-side portacaval anastomosis 15 mm. in diameter was constructed. Portal pressure before the shunt was 265 mm. 3·8% citrate solution and after the shunt 150 mm. A phlebogram of the portal vein had revealed a partial occlusion by thrombus (fig. 1), which made dissection difficult. The vein, divided high up in the porta hepatis, was more than half-filled with old tough laminated adherent blood-clot, which was removed without difficulty from the portal vein for a distance of 4 cm., leaving a fairly smooth internal surface.

Progress.—Twenty-four hours after operation the patient's condition was excellent; so it was decided that he should have a fully controlled course of heparin, which was given in doses varying from 5000 to 10,000 units six-hourly for five days. Convalescence was uneventful, and he was discharged on Dec. 1, 1951, twenty days after the operation.

Readmission.—A month later, on Jan. 1, 1952, he was readmitted, with subacute intestinal obstruction, having had colicky pains for four days and vomiting for two days, with some abdominal distension and visible peristalsis. Bowel sounds were present but not increased in intensity. A provisional diagnosis of mesenteric thrombosis was made.

Treatment and Progress.—He was treated by aspiration with a Ryle's tube and given parenteral fluids, but heparin was withheld for the time being. His progress was reasonably satisfactory until Jan. 5, eight days after the onset of his abdominal symptoms, when he began to show signs of hepatic coma. He was drowsy and detached, but when roused was very polite and repetitive. He insisted that he felt well and said that he would obey instructions but made no attempt to do so. The full picture of hepatic coma, with its irregular neurological signs, stertorous breathing, and hepatic fœtor, rapidly developed, but he never became icteric. His temperature rose to 101°F and pulse-rate to 140.

Treatment of hepatic coma according to the method of Latner (1950) was instituted together with aureomycin 500 mg. six-hourly and heparin 5000–10,000 units four-hourly. By Jan. 7, two days after the onset of coma, he was much improved, and heparin and intravenous therapy were discontinued; by Jan. 8 he had regained his normal mental and physical health. He was kept under observation for three weeks and discharged on Feb. 1.

Follow-up.—Since then he has had one mild attack of abdominal pain but otherwise has remained in the best of health and has been at full work. His blood-count has been

normal, except for a tendency to leucocytosis (up to 12,700 per c.mm.), and his platelets throughout have been about 350,000 per c.mm. His blood-proteins have remained constantly within normal limits, though the blood-albumin level dropped to 4·9 g. per 100 ml. while he was in hepatic coma.

In this case there was incontrovertible evidence of extensive portal-vein thrombosis and strong presumptive evidence that an extension of the thrombotic process into the mesenteric vein and into the liver had given rise to the serious complications of mesenteric thrombosis and hepatic coma, which developed seven weeks after portacaval anastomosis. The favourable response to heparin was dramatic.

Case 2.—A man aged 23, a builder's labourer, was admitted to St. Bartholomew's Hospital on March 29, 1952, having had epigastric pain for six weeks. Two weeks before admission he had collapsed after vomiting a considerable quantity of blood. Hæmatemesis and melæna persisted for three days and required the transfusion of 23 pints of blood. A week before admission he had developed ascites. Clinical and radiological investigations proved that he had Banti's syndrome of unknown ætiology, with extensive œsophageal varices and with normal liver-function tests. He rapidly improved under medical treatment.

Operation.—On May 2, 1952, an end-to-side portacaval anastomosis was constructed without difficulty, the stoma measuring 15 mm. in diameter. The vein was not thrombosed.

Progress was entirely satisfactory until the nineteenth postoperative day, when he became drowsy and icteric and vomited. Within a few hours he developed all the signs of liver failure. He was treated by parenteral administration of fluids and nutriment, aureomycin, and heparin, as in case 1. Forty-eight hours later he was fully recovered. He was discharged on the twenty-eighth postoperative day. Since then he has remained well and is at full work.

In this case the evidence that hepatic coma was due to intrahepatic thrombosis of the portal vein with interference of the blood-supply to the hepatic parenchyma is presumptive—the dramatic response to anticoagulant therapy. The absence of antecedent infection and the sudden onset of coma without evidence of reduced liver function suggested that the coma was due to a vascular catastrophe.

Case 3.—A man aged 36, a clerk, was admitted to St. Bartholomew's Hospital on Sept. 14, 1952, having been recognised as a case of Banti's syndrome for the previous six years. Between 1940 and 1942 he had been a prisoner-of-war in Poland, where he had suffered badly from the effects of protein starvation and vitamin deficiencies and from dysentery. He also had pulmonary tuberculosis. Six months before admission he had had a severe gastro-œsophageal hæmorrhage. His spleen became very large, and progressive decrease in his leucocyte-count to 1200 per c.mm. and platelet-count to 54,000 per c.mm. made an operation imperative. Tests showed that the liver was functioning very satisfactorily, the serum-protein level, for example, being 8·5 g. per 100 ml. (albumin 5·5 g., globulin 3·0 g.). Large œsophageal varices extended throughout the whole length of the œsophagus.

Operation.—On Sept. 19, 1952, an end-to-side splenorenal anastomosis was made, the stoma measuring 17 mm. in diameter, portal venous pressure being dropped from 235 mm. citrate to 140 mm. The liver was only mildly cirrhotic.

The *postoperative course* was very satisfactory until the nineteenth postoperative day, when the patient became unduly courteous, somewhat confused, and then irrational and restless. He vomited and lapsed into typical hepatic coma. He was treated in exactly the same way as the previous cases for three days, when he was again mentally and physically normal. On Oct. 21, thirty-two days after the shunt operation, he was discharged to a convalescent home.

Follow-up.—On Nov. 14, 1952, he again developed coma and was admitted to a hospital locally, where he was treated by the full intravenous régime for hepatic coma, together with aureomycin but without heparin. He died on Nov. 16, thirty-six hours after the second onset of hepatic coma. Necropsy was refused.

The evidence that the hepatic coma was due to thrombosis is again presumptive but strengthened in this case by the fact that recovery from the first attack was quick and complete, whereas death came rapidly in the second attack when the treatment was identical except that heparin was not given.

Case 4.—A woman aged 55, was referred by Dr. G. H. Jennings to the outpatient department at St. Bartholomew's Hospital on July 16, 1952. She had been well until the beginning of that year, when her general health deteriorated. In May she developed epigastric pain and started to lose weight, and her appetite became poor. On two occasions she had melæna. For five weeks her abdomen had been swelling, for which she had been treated in the Edgware General Hospital, paracentesis abdominis being done on three occasions.

On examination there was good evidence of cirrhosis hepatis with Banti's syndrome. A small hard liver was just palpable; the spleen was enlarged to two finger-breadths below the costal margin; palmar blush, spider nævi, ecchymoses, and ascites were present. Liver-function tests were reasonably good, the serum-protein level, for example, being 5·7 g. per 100 ml. (albumin 4·2 g., globulin 1·5 g.). She seemed to be a satisfactory case for portacaval anastomosis after medical treatment. Two weeks later, however, while still an inpatient in the Edgware General Hospital, her abdominal distension suddenly increased. She became comatose for three days and developed basal pneumonic consolidation, with a left pleural effusion. Her condition was made worse by a hæmatemesis on Aug. 6, which precipitated a comatose state from which she never recovered, dying on Aug. 20.

Necropsy showed widespread portal thrombosis with infarction of the liver, which was of a nutmeg appearance. The thrombosis had extended to the spleen and pancreas.

(Dr. G. H. Jennings gave us all the relevant information about this patient from the Edgware General Hospital.)

This case demonstrates the devastating effects of portal thrombosis and its capacity to precipitate progressive irreversible hepatic degeneration and failure, although the liver may be only mildly cirrhotic and its functional capacity, at the onset, reasonably good.

Case 5.—A man aged 48, an innkeeper, was admitted to St. Bartholomew's Hospital on May 29, 1953, with five months' history of ascites following recurrent jaundice succeeding infective hepatitis in 1943. Paracentesis became necessary every tenth day, and in April, a month before admission, he had had a severe œsophageal hæmorrhage requiring the transfusion of 6 pints of blood.

On examination he had all the physical signs of an advanced cirrhosis (proved by aspiration biopsy), and his general condition was poor. Liver-function tests confirmed the clinical findings, the serum-protein level, for example, being 5·9 g. per 100 ml. (albumin 3·0 g., globulin 2·9 g.).

Progress.—His condition suddenly deteriorated further in the middle of June. On June 22 he started to bleed again, and this continued till he died in hepatic coma on June 25.

Necropsy showed extreme cirrhosis with much nodular hyperplasia. The portal vein contained a large recent ante-mortem thrombus completely occluding its lumen.

This patient's rapid deterioration must have coincided with the formation of the thrombus in the portal vein, and it is reasonable to deduce that this not only increased his portal hypertension, leading to the severe and persistent hæmorrhage, but also prevented the portal blood from reaching the liver.

Case 6.—A man aged 39, a plumber, was admitted to St. Bartholomew's Hospital on June 19, 1953. His present illness dated back thirteen months, when he was treated for four months at St. Alfege's Hospital for persistent fever, jaundice, and ascites. (In 1946 he had had an attack of infective hepatitis in Hong-Kong, and in 1952 his liver-function tests were subnormal.) In August, 1952, laparotomy by Mr. M. G. Eldin showed that he had a cirrhotic liver with some ascites and an appendix abscess. Successful treatment of the appendicular condition led to slow but complete recovery, till in May, 1953, he had two severe œsophageal hæmorrhages.

On examination his general condition was good. A few spider nævi were present, the spleen was enlarged to four

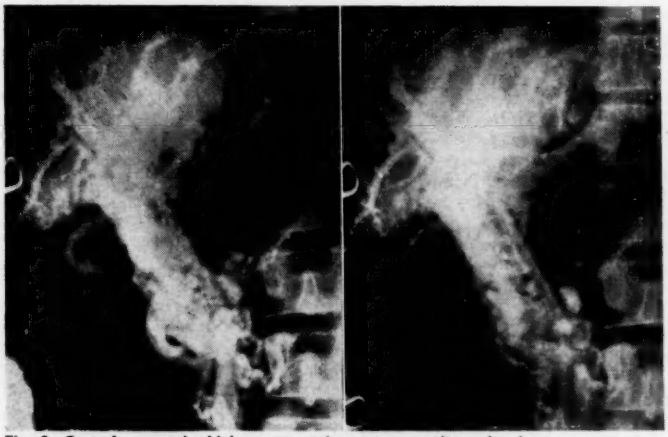


Fig. 2—Case 6: portal phlebograms, taken at operation, showing cavernomatous replacement of thrombosed portal vein, which still just shows where recanalisation has taken place (exposures 0·6 sec. each, at interval of 1 sec., flow very sluggish).

finger-breadths below the costal margin, and the liver was palpable: it was not irregular but harder than normal. Liver-function tests were excellent, the serum-protein level being 6·6 g. per 100 ml. (albumin 5·2 g., globulin 1·4 g.), and the pseudocholinesterase level was 83 units (normal 50–120 units). There was leucopenia (3600 per c.mm.) and thrombocytopenia (90,000 per c.mm.).

At operation on July 3, 1953, exploration confirmed the mildly cirrhotic state of his liver. A portal phlebogram (fig. 2) showed that his portal vein had in the past been obliterated by clot and replaced by the so-called cavernoma, rendering portacaval anastomosis impossible. After removal of the spleen, therefore, an end-to-side splenorenal anastomosis was constructed, the stoma measuring 12 × 10 mm. There was a substantial drop in portal venous pressure.

The postoperative course was satisfactory. The patient's recovery has been complete and he is now back at work.

On reviewing this case with Dr. Elliott and Mr. Eldin we have been led to the conclusion that the appendix abscess in the presence of mild cirrhosis proceeded to portal pylephlebitis, with obliteration of the portal vein. The patient's condition at that time underwent a serious temporary deterioration, with transient impairment of liver function.

Case 7.—A man aged 37, a cycle mechanic, was admitted to St. Bartholomew's Hospital on April 17, 1953. For six and a half years he had from time to time suffered from severe hæmatemesis and melæna, and for three months he had been ascitic.

On examination his complexion was dusky and he had conspicuous keratosis punctata of both palms and soles, characteristic of chronic arsenic poisoning. (He gave a story of having been treated with various liquids, some including potassium bromide and arsenic, for idiopathic epilepsy, which had begun at the age of 21.) His abdomen was distended with ascitic fluid, and his spleen was considerably enlarged. The liver edge was just palpable under the right costal margin. Tests indicated impairment of liver function, the serum-protein level, for example, being 6·5 g. per 100 ml. (albumin 3·6 g., globulin 2·9 g.); the pseudocholinesterase level was 47 units.

Treatment and Progress.—He was given the accepted medical treatment for advanced cirrhosis hepatis. He started to bleed at the beginning of May, a fortnight after admission, and he continued to bleed on and off till the second operation.

First Operation—On June 5, 1953, portacaval anastomosis was attempted but abandoned after two hours' tedious dissection of a partially thrombosed and very adherent portal vein.

Second Operation.—A fortnight later a splenorenal anastomosis was constructed, but not without great difficulty. The splenic vein was half-full of old tough adherent gelatinous clot which had to be scraped out with a Volkmann's spoon. The shaggy end of the vein had to be cut away. To get splenic and renal veins together it was necessary to sacrifice the left kidney and to make an end-to-end anastomosis. This measured 12 mm. in diameter and appeared to function surprisingly well.

After operation the ascites drained freely for ten days, during which time the patient's life was in jeopardy with fever, intestinal obstruction, and hepatic coma attributed to partial mesenteric and intrahepatic thrombosis. However, he recovered. His ascites dried up completely, and he is now restored to very good health and full work.

This man was desperately ill. Extensive portal thrombosis was demonstrated at both operations. The relief of his portal hypertension, by scraping away the clot in the splenic vein to make portal-systemic venous anastomosis possible, appears to have been successful in restoring him to health. He had bled so much and so often that heparin was not administered.

Discussion

INCIDENCE OF THROMBOSIS IN PORTAL HYPERTENSION

These 7 cases, in which thrombosis materially affected the clinical course of the illness, were observed during the management of 134 patients with portal hypertension by one of us (A. H. H.). In 23 the obstruction was extrahepatic, of which 5 had proved thrombosis; and 1 (case 7) also had cirrhosis hepatis. In 111 patients the obstruction was intrahepatic. Thrombosis was proved to be present in 12 of this group; and in 2 more (cases 2 and 3) there is strong presumptive evidence that thrombosis developing postoperatively was of clinical significance. (In the extrahepatic group congenital obliteration of the portal vein and thrombosis associated with constriction by malignant disease were excluded; and in the cirrhotic group plaques on the wall of the portal vein or its major tributaries were not considered as evidence of active thrombosis. Postoperative obliteration of portal-systemic venous anastomoses by clot was also excluded.)

The incidence of proved thrombosis in this series was therefore 17 out of 134 (13%); in extrahepatic obstruction, 5 out of 23 (22%), and in intrahepatic obstruction, 12 out of 111 (11%). These figures are probably minimal because, as we have become aware of the possible significance of thrombosis, we have searched for it more carefully and found it more often.

PRECIPITATING FACTORS

The 17 cases of proved thrombosis have been reviewed in the hope that the platelet-counts, prothrombin levels, and portal pressures might disclose something of interest, but this has not been the case. Stagnation of blood in the main portal vein is probably the only constant ætiological factor of real importance. Splenectomy renders thrombosis more likely, and infection may occasionally play a part.

CLINICAL EFFECTS

Thrombosis does not, in our opinion, lead to any symptoms that do not ordinarily occur in association with portal hypertension, but it may, we suggest, precipitate an acute and often fatal episode before severe parenchymatous liver damage is evident.

Hæmorrhage, for example, may become continuous and prolonged, as in cases 5 and 7.

Progressive coma may develop, as in cases 1 and 4, in spite of reasonable biochemical function of the liver. In cases 1, 2, and 3 the coma responded to treatment which

included heparin. On the other hand, we have had 2 other comparatively healthy patients who have recovered from delayed coma following portacaval anastomosis without the assistance of heparin, as did case 7.

Ascites may possibly, on occasion, be intimately related to the presence of diffuse portal thrombosis, as in case 7.

Irreversible deterioration occurred in cases 4 and 5, and massive recent portal thrombosis was demonstrated post mortem in both these patients.

Typical Banti's syndrome developed in all its aspects in a patient known to have mild cirrhosis hepatis (case 6, fig. 2). In this case portal pylephlebitis had produced an extrahepatic obstruction which precipitated the hæmorrhagic and hæmatological aspects of the syndrome with no more than temporary deterioration of the liver.

TREATMENT

Thrombosis in Relation to Surgical Intervention

It is important to recognise that serious thrombosis may occur, because, as in cases 1 and 7, it may render surgical treatment excessively difficult or even impossible. For example, had splenectomy been done as a first stage in the treatment of case 7, no portal-systemic venous anastomosis would have been possible. Yet another cirrhotic patient (too recent to be included in the present series) had had her spleen removed elsewhere during a hæmorrhage, without benefit. At exploration for portacaval anastomosis the gastrohepatic omentum was felt to be more solid and tougher than usual, and the normal "bounce" of the portal vein could not be detected between the thumb and the index finger in the foramen of Winslow. These findings suggested thrombosis, yet the radiograph (fig. 3) apparently showed the portal vein to be normally patent. Closer examination of the first film, however, shows a defect of filling just beyond the porta hepatis, which is not due to streaming because of the absence of splenic blood and the good and uniform concentration of contrast medium within the liver. Measurement of the speed of blood-flow was satisfactory. Dissection of the vein, which was of exceptional difficulty and took nearly two hours, proved that it was partially thrombosed. A satisfactory portacaval anastomosis was eventually constructed, and the patient's prospects are now excellent. Anxieties at operation would have been less acute if her splenic vein had been present for splenorenal anastomosis, had portacaval been impossible.

In spite of the X-ray findings in this last case we consider that a good portal phlebogram, obtained on the operating-table, may often be of the greatest assistance in demonstrating the condition of the portal vein (Hunt 1952b and figs. 1 and 2). The radiographs need to be interpreted with care for two reasons: (1) streaming of blood in the portal vein may give the appearance of a defect in filling; and (2) a flat thrombus plastered against the wall of the vein may not clearly show (fig. 3). The wet films must be scanned in the light of the findings on digital examination.

The presence of an extensive thrombosis does not necessarily preclude the successful construction of a shunt, provided the thrombus is removed with the greatest care (cases 1 and 7, and the patient cited above).

Heparin may be administered, but only with caution. It is our opinion that it should not be started until at least twenty-four hours have elapsed after any major operation. It is required only if the portal intima is damaged or accurate eversion of the stoma is not obtained. The risk of hæmorrhage from excessively vascular retroperitoneal tissues is undoubtedly great during the immediate postoperative phase if heparin is given. It is necessary to control the dosage carefully. It has been our aim to maintain the clotting-time at between six and ten minutes.

An observation which is self-evident is that hepatic arterial ligature should not be contemplated when the blood-flow to the liver through the portal vein is impeded by clot.

Thrombosis in Relation to Hepatic Coma

We were greatly impressed by the rapid and complete recovery of case 1 from deep hepatic coma on the administration of heparin. The patient was known to have portal thrombosis and appeared to have mesenteric thrombosis, from which he recovered with equal rapidity. Our interest in this case stimulated us to be more aware of the possibility that thrombosis might sometimes largely account for hepatic coma. The importance of this suggestion lies in the fact that hepatic coma has been shown to be the commonest cause of death in portal hypertension (Blakemore 1951, Hunt 1952a).

Our method of treatment of coma has been based on that of Latner, incorporating more recently the valuable suggestion of Walshe (1953) to use glutamic acid. Aureomycin has also been given in full therapeutic doses in view of the discovery of Markowitz et al. (1949) that the liver could be protected with penicillin.

We have assumed that the thrombosis impedes liver function in two ways: (1) by obstructing the flow of portal blood to the liver when the thrombus is in the portal vein; and (2) by causing congestion within the liver when the thrombosis extends to the intrahepatic branches of the portal vein. In both instances heparin should, theoretically, be of value, provided there is no risk of precipitating hæmorrhage and provided the blood-prothrombin level is not unduly low.

It is not our intention to recapitulate the symptoms and signs of hepatic coma (Walshe 1951), but we wish to draw attention to an early symptom which appears so far to have escaped general recognition. It is the inane civility which some cirrhotic patients exhibit before the actual phase of coma develops. We have come to the regrettable though comforting conclusion that the choleric temperament, when present in patients with cirrhosis, is evidence of relatively stable though defective liver function, whereas a change to repetitive politeness or pointless agreeability should be regarded as a symptom of incipient coma and therefore viewed with grave suspicion.

Summary

The histories of 7 patients with cirrhosis have been briefly told to draw attention to the probable rôle of thrombosis of the portal vein in altering the clinical course of this condition.

Active thrombosis has been observed in at least 11% of all cirrhotic patients, irrespective of the degree of cirrhosis.

Occasions may arise when the presence of such thrombosis materially affects the treatment both surgical and medical.

We suggest that there is a small group of patients in whom the discriminating use of heparin may be of value as a therapeutic adjunct to the accepted methods of treating hepatic coma.

We are very grateful for the help of the physicians and surgeons who referred these patients—Dr. R. Bodley Scott, Dr. C. A. Birch, Dr. G. H. Jennings, Dr. W. A. Oliver, Dr. W. A. Elliott, Mr. M. G. Eldin, Dr. T. Robson, and Dr. H. K. Goadby. We are also indebted to Dr. G. H. du Boulay and Dr. B. Green, of the department of diagnostic radiology, St. Bartholomew's Hospital, for taking the phlebograms, and to Mr. N. K. Harrison, of the photographic department of the Hospital, for providing us with the illustrations.

REFERENCES

Blakemore, A. H. (1951) *J. int. Chir.* **11**, 237.
Hunt, A. H. (1952a) *Brit. med. J.* ii, 4.
— (1952b) *Proc. R. Soc. Med.* **45**, 722.
Latner, A. L. (1950) *Brit. med. J.* ii, 748.
Markowitz, J., Rappaport, A., Scott, A. C. (1949) *Proc. Soc. exp. Biol., N.Y.* **70**, 305.
Walshe, J. M. (1951) *Quart. J. Med.* **20**, 421.
— (1953) *Lancet*, i, 1075.

BLOOD DYSCRASIAS ASSOCIATED WITH CHLORAMPHENICOL

AN INVESTIGATION INTO THE CASES IN THE BRITISH ISLES

ROBERT HODGKINSON
M.A., M.B. Camb.

From the Department of Clinical Investigation (London), Parke, Davis & Co. Ltd.

THIS is a survey of cases of blood dyscrasias, associated with the administration of chloramphenicol, some of which were reported in reply to a questionnaire sent to 20 centres, including most of the teaching hospitals in the British Isles, by the Antibiotics Clinical Trials (non-tuberculous conditions) Committee of the Medical Research Council. Cases were reported from Belfast (2), Sheffield (1), Leeds (3), London centres (7), Manchester (3), and Oxford (1). The method of inquiry varied from centre to centre, some circulating the questionnaire to hospitals in their region, while others reported only cases occurring in their own hospital. In a separate inquiry undertaken by the Department of Clinical Investigation (London) of Messrs. Parke Davis, representatives were asked to report any cases mentioned during their visits to doctors. As a result, 21 cases were reported, and these were investigated, as far as possible, by examination of the patient's case-record, and an interview with the doctor at the hospital or practice concerned. A number of cases were common to both inquiries. Since the investigation was started 5 have been reported in greater detail by the physicians in charge of the patients (Hawkins and Lederer 1952, Wolman 1952, Franklin and Garrod 1953).

Findings

CLINICAL MANIFESTATIONS

In 28 of the 31 cases reported the blood dyscrasia was classified as aplastic anæmia. The results of bodily injury produced by drugs are rarely revealed as dramatically as the hæmorrhage subsequent to bone-marrow damage in these cases. In 26 of the 28 cases of aplastic anæmia there were hæmorrhagic manifestations such as severe epistaxis, hæmoptysis, bleeding from the gums, hæmatemesis, spontaneous bruising, and petechial hæmorrhages.

3 patients presented with granulocytopenia, without involvement of the erythrocytes.

Case 14.—Towards the end of six months' intermittent treatment with chloramphenicol and sulphonamides this patient developed jaundice described as of an obstructive type. Two weeks after the end of the course petechiæ and bruises appeared. The platelets were 140,000 per c.mm., and the white cells 6700 per c.mm. (neutrophils 33%, lymphocytes 57%, eosinophils 6%). For three months the platelet-count varied between 140,000 and 200,000 per c.mm. The child made a spontaneous recovery.

Case 30.—Two days after the administration of 5 drachms of chloramphenicol palmitate (about 1 g. of chloramphenicol) the white-cell count fell to 3800 per c.mm. (neutrophils 7%, lymphocytes 91%, monocytes 1%, eosinophils 1%). For the next three days the white-cell count varied between 1800 and 2600 per c.mm. (polymorphs 8–10%). Later the white-cell count increased to 7100 (neutrophils 48%, lymphocytes 45%, monocytes 5%, eosinophils 2%), and the child made a spontaneous recovery.

Case 21.—Six days after completion of a course of chloramphenicol, purpura, pyrexia, and ulceration of the fauces developed. The Hb was 100% (Haldane), the white-cell count 800 per c.mm. (neutrophils 22%, lymphocytes 78%), and the platelet-count 310,000 per c.mm. A marrow biopsy showed the majority of cells present to be lymphocytes and red-cell precursors, and the granulocyte series was scanty. The patient died of bronchopneumonia.

In 8 patients jaundice was noted between the administration of chloramphenicol and the development of hæmorrhagic or anæmic manifestations. Only in 1 case was the jaundice investigated in hospital.

Case 6.—One month after the administration of chloramphenicol this patient developed jaundice which lasted about one month. The stools were pale, and the liver palpable. A blood-count performed on admission to hospital and after the jaundice had been present for about two weeks, showed the hæmoglobin to be 100% (Haldane) and the white-cell count to be 6800 (neutrophils 69%, lymphocytes 29%, monocytes 5%, eosinophils 1%). The sternal marrow was also normal (leucoblast/erythroblast ratio 3:1; both the red-cell and white-cell series showed normal development, megalokaryocytes were present, and the platelets abundant). The liver-function tests gave the following results: plasma-proteins 6·0 g. per 100 ml. (albumin 4·4 g., globulin 1·6 g.) bilirubin 8·0 mg. per 100 ml., alkaline phosphatase 14 units, thymol turbidity 1 unit, and colloidal gold 0. The icterus index was 110 units. Within a week of the jaundice clearing the blood showed reduced red-cell and white-cell counts with a prolonged clotting-time. The patient died of aplastic anæmia a week later. Necropsy findings were multiple hæmorrhages in most organs and almost complete aplasia of the bone-marrow. Evidence of hepatitis was not seen.

HÆMATOLOGICAL INVESTIGATIONS

The peripheral blood-counts in the cases of aplastic anæmia showed reduction of the red-cell, white-cell, and platelet counts. The sternal marrow was examined by biopsy or at necropsy in 22 cases and showed a reduction of the total cell-count; red-cell and white-cell precursors were scanty, with an increased proportion of lymphocytes. Megakaryocytes were reduced in numbers or absent.

NECROPSY FINDINGS

Necropsy usually revealed widespread hæmorrhages in the internal organs, bruising and petechiæ of the skin, and aplastic bone-marrow. The immediate cause of death was, in many cases, an internal hæmorrhage. Damage to the liver, apart from fatty degeneration (2 cases), was not mentioned in the post-mortem reports except in case 5:

This patient had not had jaundice during the illness. The liver was found to be irregular owing to scarring. On section the scars were found to be recent, flabby, and produced by large areas of confluent hepatic necrosis. In one or two areas there were signs of a multilobular cirrhosis, the remainder of the liver being pale and slightly softer than normal.

AGE AND SEX DISTRIBUTION

The age and sex distribution are shown in table I. Cases occurred in all age-groups, but the highest incidence was in the first decade of life, which accounted for about one-third of the cases. This is probably due to the great frequency of infection, and the consequently greater use of antibiotics in childhood.

PROGNOSIS

Of the 31 cases 24 have so far proved fatal. 4 patients have recovered, including 2 with granulocytopenia. 3 are still being maintained by blood-transfusions.

DOSAGE AND DURATION OF CHLORAMPHENICOL TREATMENT

Adults

An exceptionally heavy total dose of chloramphenicol for an adult would be 26 g. (104 capsules). Assuming a

TABLE I—AGE AND SEX DISTRIBUTION OF BLOOD DYSCRASIA ASSOCIATED WITH ADMINISTRATION OF CHLORAMPHENICOL

Age-group (yr.)	10 and under	10–20	20–30	30–40	40–50	50–60	60–70	Total
Male ..	4	—	—	1	2	3	3	13
Female	6	4	4	2	1	1	—	18
Total ..	10	4	4	3	3	4	3	31

TABLE II—TOTAL DOSE OF CHLORAMPHENICOL AND OTHER DRUGS ADMINISTERED AND INDICATION FOR TREATMENT IN ADULTS

Case no.	Dosage of chloramphenicol (g.)	Other drugs used	Indication
1	1	Pyribenzamine 75 mg.	Coryza
3	70	'Benadryl' used intermittently for five yr.	Respiratory infection
4	15	Sulphacetamide 3 g.	Urinary infection
5	48	Streptomycin 10 g., aureomycin 164 g., oxytetracycline 30 g., penicillin 66,000,000 I.U.	Osteomyelitis
6	30–40	A sulphonamide 32 g., penicillin 2,800,000 I.U.	Tonsillitis
8	[Considerably over 26]	Sulphonamides, other antibiotics	Coryza, &c.
9	54 (approx.)	Sulphamezathine 16 g.	Bronchiectasis
10	40–80	—	Bronchiectasis
13	34	—	Erythema multiforme
16	Over 50	—	Bronchiectasis
18	60 (approx.)	Succinyl sulphathiazole "many courses"	Chronic ulcerative colitis
19	9	X-ray treatment for three months	Bronchitis
22	[100–200]	—	Bronchiectasis
23	Over 45	Sulphonamides	Chronic urinary infection
27	Over 50	—	Chronic bronchitis
28	About 288	—	Chronic urinary infection
29	72	Sulphadimidine 21 g.	Chronic urinary infection
21	34	—	?
26	70	Sulphadimidine 20 g., aureomycin 40 g., penicillin 8,000,000 I.U.	Septic arthritis

Figures in square brackets are estimations based on the clinical notes and are omitted from the analysis of dosages administered.

body-weight of 150 lb., and treatment for a week, this would be a daily dosage of 50 mg. per kg.

Of the 19 adults (table II) in this series 16 received more than 26 g. of chloramphenicol, and the average quantity taken by the 14 patients whose total dose is known was more than 60 g.

3 adults received less than 26 g. Of these, one is stated to have received only 1 g. of chloramphenicol and 75 mg. of pyribenzamine for a common cold a week before symptoms of aplastic anæmia appeared; another was a man, aged 66, with hypertension, emphysema, and eczema, who received 15 g. of chloramphenicol and 3 g. of sulphacetamide for a urinary infection before undergoing transurethral prostatectomy; and the third was given 9 g. of chloramphenicol for bronchitis.

Children

For children a dosage schedule of 100 mg. per kg. body-weight daily for a week represents the upper limit. On this basis the maximum amount given at various ages would be: 6 months, 5 g.; 1 year, 7 g.; 3 years, 10 g.; 5 years, 13 g.; 7 years, 16 g.; 10 years, 21 g.

Of 11 children (table III) 5 received more than this normal maximum, the average amount administered being more than twice as high. In the remaining cases the quantity given to 1 patient is not known, and that given to 4 was less than the normal maximum. For only 3 of the patients was the duration of treatment less than twenty-four days.

The duration of treatment, the number of courses given and the interval between courses, and the first symptom or sign of a blood dyscrasia are shown in the figure.

DISEASES TREATED

These are shown in tables II and III. Chronic diseases were present in 14 cases (bronchiectasis and chronic bronchitis in 9, chronic urinary infections in 3, chronic ulcerative colitis in 1, erythema multiforme in 1), subacute in 2 (arthritis and osteomyelitis), and acute illnesses in 15 (coryza in 2, respiratory infection in 1, whooping-cough in 3, chickenpox in 1, tonsillitis in 1, gastro-enteritis in 2, acute urinary infections in 2, various infectious diseases in 3).

COLLATERAL TREATMENT

In 14 cases chloramphenicol was administered alone. Of the remaining 17, in 12 chloramphenicol was given with a sulphonamide, in 1 with streptomycin, in 2 with aureomycin, in 1 with oxytetracycline, in 4 with penicillin, and in 2 with antihistaminics. Of these drugs the sulphonamides, streptomycin, and pyribenzamine have been reported to be associated with the occurrence of aplastic anæmia.

Discussion

The average dosage of chloramphenicol administered to patients in 24 of the 31 cases in this series was very high, being over double what is regarded as the maximum necessary to control most infections and four times the dose commonly used. The duration of treatment was also long, especially in children, where all but 3 received the antibiotic for twenty-four days or more.

In half the cases reported the indications for treatment were chronic diseases, such as bronchiectasis, where the aim was to control and not to eliminate the infection.

In my view such diseases are unsuitable for treatment with chloramphenicol, and probably unsuitable for antibiotic therapy in general—except perhaps during an acute exacerbation of the infection. In view of the influence of high dosage the following recommendations are made:

(1) In adults the total dose of chloramphenicol given should not exceed 26 g. (104 capsules) without very careful consideration of the risks involved.

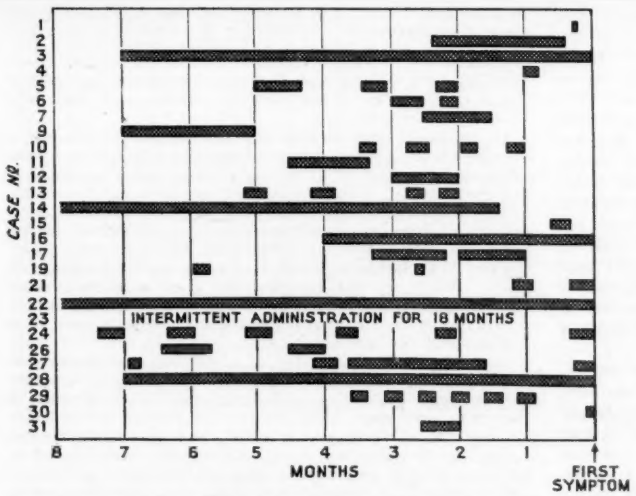
(2) In children the total dose given should not exceed the following (equivalent to 100 mg. per kg. body-weight daily for seven days):

Age	*Dosage*
6 months	5 g.
1 year	7 g.
3 years	10 g.
5 years	13 g.
7 years	16 g.
10 years	21 g.
More than 10 years	25 g.

(3) The length of treatment should not exceed ten days.

TABLE III—TOTAL DOSE OF CHLORAMPHENICOL AND OTHER DRUGS ADMINISTERED AND INDICATION FOR TREATMENT IN CHILDREN

Case no.	Dosage of chloramphenicol (g.)	Normal maximum (100 mg. per kg. body-weight daily for a week) (g.)	Other drugs	Indications
2	29·25 in 48 days	13·7	A sulphonamide, two courses	Bronchiectasis
7	12 in 24 days	14·3	—	Whooping-cough
11	28 in 44 days	17·4	Pil. violæ crys.	Whooping-cough
12	24 in 31 days	11·4	Sulphonamides 21g., penicillin	Whooping-cough
14	6 months' intermittent treatment	—	A sulphonamide	Bronchiectasis
15	5·5 in 6 days	9·5	—	Gastro-enteritis
17	Not known. Two courses	—	—	Measles and whooping-cough
20	9·4 in 4 months	12·7	—	Bronchitis
24	Over 50 in 6 months	14·3	—	Various infectious diseases
30	1 in 2 days	17	—	Gastro-enteritis
31	12 in 5 days	23·8	—	"Influenzal state"
25	30	25	'Sulphatriad' 30 g.	Urinary infection



Duration of courses of chloramphenicol and time-lag between courses and first symptom of blood dyscrasia.

I would emphasise that these are maxima. For the control of most infections it is unnecessary to give so much chloramphenicol or to give it over a period so long as ten days.

For the sulphonamides, a restricted dosage such as the above, has been in general use for many years following early reports of toxic reactions. In particular, the report of Sutliff et al. (1943) should be considered, in which 25 deaths, including 12 due to blood dyscrasias, are said to have taken place in New York City in 1943. Of the first 6 patients mentioned who died of agranulocytosis all received 50 g. or more of a sulphonamide. Other patients, however, received considerably less.

There are also other important reasons for caution before giving chloramphenicol or any other antibiotics in large amounts or for a long time. Damage to other bodily systems is seldom revealed as dramatically as the hæmorrhage produced from bone-marrow damage, and may easily pass unnoticed; but it may nevertheless be serious for the patient. The normal flora of the body is altered, resistant strains of micro-organisms are produced, and superinfections may occur. The latter changes, which are commoner than the development of blood dyscrasias, probably depend on the dosage used. Prolonged administration also accentuates the dangers arising from delayed diagnosis and may mask a disease without curing it.

In addition to the duration and degree of exposure to chloramphenicol, two other ætiological factors are probably of importance—namely, the administration of other drugs and the individual susceptibility of the patient. 12 patients had received sulphonamides and 1 streptomycin, and it is possible that the occurrence of aplastic anæmia in these cases resulted from additive or synergistic toxicity.

Summary

28 cases of aplastic anæmia and 3 of granulocytopenia associated with the use of chloramphenicol are described.

In 24 of the 31 cases the dosage administered was in excess of, and the average was over double that of, a dosage calculated to be the maximum necessary to control most infections, and over four times that commonly used. In 2 further cases treatment was continued for over twenty-four days, although the total amount given was not very high.

In view of the association of blood dyscrasias in this series with a prolonged high dosage of chloramphenicol it is recommended that, without careful consideration of the risks involved, the dosage schedule of this antibiotic should not exceed the following:

(1) In adults a total dose of 26 g. (104 capsules).

(2) In children the total dose should not exceed the equivalent of 100 mg. per kg. body-weight daily for seven days.

(3) The length of treatment should not exceed ten days.

I should like to express my thanks to the members of the M.R.C. Antibiotic Clinical Trials (non-tuberculous conditions) Committee for supplying records of cases which would otherwise not have been traced; to the many general practitioners and hospital physicians without whose coöperation in tracing details of patients this investigation would not have been possible; to Sir Alexander Fleming and Prof. Robert Cruickshank for their encouragement; and to Prof. Clifford Wilson for his continued help and advice in analysing the case-records.

REFERENCES

Franklin, A. W., Garrod, L. P. (1953) *Brit. med. J.* ii, 1067.
Hawkins, L. A., Lederer, H. (1952) *Ibid*, ii, 423.
Sutliff, W. D., Helpern, M., Griffin, G., Brown, H. (1943) *J. Amer. med. Ass.* **121**, 307.
Wolman, B. (1952) *Brit. med. J.* ii, 426.

ACQUIRED TOXOPLASMOSIS

WITH A REPORT OF TWO CASES SIMULATING GLANDULAR FEVER AND ONE POSSIBLE CASE RESEMBLING TYPHUS

ERIC SKIPPER
M.D. Lond., F.R.C.P.
PHYSICIAN TO THE SHEFFIELD ROYAL INFIRMARY

J. K. A. BEVERLEY
B.Sc., M.B. Sheff.
LECTURER IN BACTERIOLOGY, UNIVERSITY OF SHEFFIELD

C. P. BEATTIE
M.A., M.B. Edin., D.P.H.
PROFESSOR OF BACTERIOLOGY IN THE UNIVERSITY

INFECTION with *Toxoplasma gondii* may be either congenital or acquired.

The *congenital* variety was first described by Jankû in 1923, and since then its features have become well known. Some 50 cases have been reported in this country, the first being that of Jacoby and Sagorin (1948). The American Committee on Toxoplasmosis (Sabin et al. 1952) states that the disease should be suspected in the presence, soon after birth, of clinical manifestations such as encephalitis, a rash, jaundice, enlargement of the spleen and liver, hydrocephalus, and choroidoretinitis. In later infancy and in childhood convulsions and psychomotor retardation, in association with choroidoretinitis, may be found, and many cases have been recognised when the child has begun to try to read. Radiological evidence of intracerebral calcification in the form of curvilinear streaks may prove a valuable diagnostic aid but is not always present. The late results of congenital toxoplasmosis may not be recognised until adult life. Campbell and Clifton's (1950) family and the man of 40 with choroidoretinitis described by Duke-Elder et al. (1953) may be examples of this.

Acquired toxoplasmosis occurs in both latent and active forms. The latent is by far the most common, and evidence obtained by serological surveys for the presence of toxoplasma antibodies indicates its prevalence in many species of animals and in man. Indeed, it is probable that by adult life between a quarter and half of our entire population have become infected (Frenkel 1948, Feldman and Sabin 1949, von Zeipel and Linder 1951, Verlindi and Makstenieks 1951, Gard 1951, Thalhammer 1951, Fisher 1951, Beverley and Beattie 1952). Women who bear toxoplasmic infants have the disease in latent form with, usually, a high titre of antibodies; it is extremely rare for them to show any clinical manifestations of toxoplasmosis. A number of cases of acquired toxoplasmosis with clinical evidence of active disease have now been described. The published reports show that two main types predominate.

In the first type, the disease usually runs a benign course, in which lymphadenitis is the most prominent feature and glandular fever may be closely simulated. Siim (1951, 1952) reported 8 cases of this type, including 6 in children aged 2–15 years. The duration of the adenopathy, which was present in the neck and axillæ in all 8 cases and in the groins in 6, varied from six weeks to several months, but febrile disturbance was short. In 2 cases there was radiological evidence of enlargement of the hilar glands. In all 8 cases the sera gave a strongly positive dye test and complement-fixation test. The total white-cell count varied from 4800 to 16,200 per c.mm., a variable lymphocytosis was almost constant, and in 4 cases abnormal forms of lymphocytes resembling those of glandular fever were seen. Magnusson (1951) and Gard and Magnusson (1951) have described similar cases.

The second type of acquired toxoplasmosis assumes a much severer form and is often fatal (Pinkerton and Weinman 1940, Sabin 1941, Pinkerton and Henderson 1941, Franke and Horst 1952, Sexton et al. 1953, and others). It is often described as a typhus-like illness. Fever is high and there is nearly always a diffuse maculopapular rash which tends to spare the scalp, palms, and soles. Enlargement of the inguinal, axillary, and abdominal glands is common, and pneumonia, sometimes described as atypical, may develop. Myocardial involvement, shown by pronounced tachycardia and electrocardiographic changes, is not uncommon. In some cases encephalitis has been the predominating feature. At necropsy there may be wide dissemination of the parasite, which has also in many of the cases been recovered by animal passage.

Hitherto no case of acquired toxoplasmosis has been reported in this country. We describe here 2 cases of the glandular type and 1 which we think may be of the variety resembling typhus fever.

Case-records

Case 1.—A male medical student, aged 21, reported sick on Nov. 25, 1951, and was examined by Dr. P. W. W. Gifford, to whom we are indebted for clinical details.

He complained of severe headache, general malaise, and pains in the limbs. His temperature was 103°F, and enlarged tender glands were present in the posterior triangle of the neck and in the axillæ. A white-cell count showed 9800 per c.mm. (polymorphs 42%, lymphocytes 36%, monocytes 20%, eosinophils 1%, basophils 1%). Of the monocytes 10% were abnormal forms suggesting glandular fever. A Paul-Bunnell test was negative.

He then returned home and was not seen again until April, 1952, when he still had enlarged glands in the neck and axillæ. A Paul-Bunnell test was again negative. The lymphadenopathy gradually subsided, but he remained in vague ill health throughout the summer.

*Investigations for toxoplasmosis.**—On June 22, 1952, the cytoplasm-modifying (dye) test was 1 : 9000, the complement-fixation test 1 : 32, 1 : 64 ±, and the toxoplasmin skin test strongly positive.

Case 2.—A boy, aged 15, attended as an outpatient on Jan. 25, 1952, complaining that for three weeks he had had lumps in his neck. These were not painful, and there were no other symptoms.

He looked fit and was afebrile. His occipital and posterior sternomastoid glands were moderately enlarged on both sides, and a gland about as big as a pigeon's egg was felt in his left axilla. Clinical examination, including that of the eyes, was otherwise negative, and the urine contained no abnormality. A blood-count showed Hb 98%, red cells 5,000,000 per c.mm., colour-index 1, white cells 9000 per c.mm. (polymorphs 23%, lymphocytes 55%, monocytes 11%, band cells 4%). Many of the lymphocytes were abnormal, some resembling Downey cells type I; others resembled Downey cells type II but with less homogeneous cytoplasm. The Paul-Bunnell test was negative.

He was admitted into the Sheffield Royal Infirmary on Feb. 23, 1952. Throughout his stay he continued afebrile; the enlarged glands rapidly diminished. Radiographs of the chest and skull were normal. A second blood-count (on Feb. 23, 1952) showed Hb 90%, red cells 5,000,000 per c.mm., colour-index 0·9, mean corpuscular diameter 7·2 μ, platelets 240,000 per c.mm., white cells 11,000 per c.mm. (polymorphs 53%, lymphocytes 32%, monocytes 9%, band cells 4%, eosinophils 2%). An occasional lymphocyte still showed abnormal morphology. Bone-marrow puncture showed normal cytology, and no toxoplasma. A gland biopsy from the neck showed little, if any, hyperplasia of the germinal centres. Scattered through the pulp were small rounded groups of large cells with faintly basophil cytoplasm and large reticulated nuclei containing usually, a single nucleolus. A few of these cells had two nuclei, and occasionally up to half a dozen; no mitoses were seen. The cells were phagocytic and contained inclusions staining with hæmatoxylin. Rarely, an included cell was seen, but none of the inclusions resembled toxoplasma. The over-all appearance resembled that seen in the glands in infectious mononucleosis.

The patient was discharged on March 7, 1952. Small shotty glands continued to be palpable in the neck until September, but these had disappeared by December, 1952, when he was last seen and he felt perfectly fit.

Investigations for toxoplasmosis.—The cytoplasm-modifying (dye) test was 1 : 12,800 on Feb. 1, 1952; well over 1 : 6400 on Feb. 15; 1 : 8000 on May 7; and 1 : 1020 on Sept. 9, 1952. The complement-fixation test was 1 : 80, 1 : 160 ± on Feb. 1; and 1 : 16, 1 : 32 ± on May 7. The skin test was strongly positive on Feb. 27. Attempts to isolate toxoplasma were made by inoculating citrated blood intraperitoneally into 6 mice on Feb. 15; ground lymph-node tissue intraperitoneally into 6 mice and intracerebrally into 6 mice on Feb. 25; and heparinised bone-marrow intraperitoneally into 6 mice and intracerebrally into 6 mice on Feb. 27. Toxoplasma infection could not be demonstrated in any of the 30 mice originally inoculated, and blind passages failed to produce it.

Case 3.—A married Polish woman, aged 48, was admitted to the County Infirmary, Louth, on Sept. 26, 1952, under the care of Dr. M. Steel. She had had contact with typhus in the 1914–18 war but, so far as was known, had never contracted it. In 1939 she went to Russia for two years, and thence to North Africa, where she had malaria and amœbic dysentery in 1944. In 1949 she came to England and remained well until her present illness. She had had four children, all healthy, and there had been no close contact with animals. A week before admission she had headache, generalised muscular pains, an intermittent pain in the right side of her chest, sore throat, and fever. Two days before admission she had epigastric pain and headache, which was so severe that she screamed. Her private doctor found signs suggesting pneumonia.

On admission her temperature was 102°F, pulse-rate 140, and respirations 28. She was delirious, and her whole body, excepting her face, showed a maculopapular rash. Labial herpes was present. There were no other abnormal clinical signs. The erythrocyte-sedimentation rate was 40 mm. in 1 hour and the blood-urea level 41 mg. per 100 ml. A blood-count showed Hb 103%, white cells 11,000 per c.mm. (polymorphs 87%, lymphocytes 12%, monocytes 1%). The urine contained no abnormality. Blood taken for culture remained sterile. The Paul-Bunnell test was negative, as were agglu-

* The serological tests used for this work were the cytoplasm-modifying (dye) test (Sabin and Feldman 1948) modified by Beverley and Beattie (1952); the complement-fixation test (Sabin 1949); and the skin test (Frenkel 1948).

tination tests for TH and O, BH and O, non-specific salmonella, and *Brucella abortus*. The Wassermann, Kahn, and Meinicke reactions were negative. Radiographs of the chest and sinuses were normal. Weil-Felix reactions were OX19 1 : 80, OXK 1 : 30, and OX2 nil on Oct. 8; and OX19 1 : 140, OXK 1 : 60, and OX2 nil on Oct. 11.

When admitted she was put on penicillin, and her pyrexia diminished, but an irregular low-grade fever up to 99·4°F continued. Two weeks after admission the fever was still present, she was tender in the right hypochondrium, and small purplish-red macules 2–3 mm. in diameter were still present on the backs of her calves, her chest, the medial sides of her upper arms, and the volar surfaces of her forearms. She complained of pain down the back of the right leg, and there was severe pain on straight-leg raising. Lumbar puncture at this time produced xanthochromic fluid with 250 red cells per c.mm. and 35 white cells per c.mm., mainly lymphocytes. Queckenstedt's test was positive. A course of 'Sulphatriad' was given for 6 days because *Escherichia coli* infection of the urine was discovered. On Oct. 21 Dr. A. Felix made a second Weil-Felix test with the following result: OX19 1 : 100; OXK 1 : 50; OX2 1 : 50.

The patient discharged herself on Nov. 1, when her clinical state was unchanged, and thereafter she improved slowly, though pains in the back and legs continued for a time. Subsequent agglutination tests with OX19 (Dr. Felix) on Nov. 11 and Dec. 9, 1952, and on Feb. 15, 1953, were positive 1 : 100 ±. She was well when last seen in June, 1953; the only abnormal finding was absence of the left ankle-jerk.

Investigations for toxoplasmosis.—The dye test was 1 : 64 on Oct. 7, 1952; 1 : 294 on Oct. 17; 1 : 300 on Oct. 21; 1 : 260 on Nov. 13; and 1 : 53 on Feb. 17, 1953. On the same dates the complement-fixation-test titres were anticomplementary; 1 : 2, 1 : 4 ±; 1 : 8, 1 : 16 ±; 1 : 8, 1 : 16 ±; 1 : 10 respectively. On Oct. 13, 1952, 6 mice were inoculated intraperitoneally with heparinised blood and 6 intraperitoneally and intracerebrally with cerebrospinal fluid (C.S.F.). Two guineapigs were inoculated intraperitoneally and 2 intracerebrally with heparinised blood, and a similar number by the same routes with C.S.F. The animals were inoculated five hours after the collection of the specimens. No illness developed in them and subsequent animal passage was negative.

Discussion

In a review of the diagnostic value of immunological tests for toxoplasmosis Sabin et al. (1952) conclude that the cytoplasm-modifying (dye) test (Sabin and Feldman 1948) is the most valuable. The complement-fixing antibody (Sabin 1949) appears later and disappears earlier than the cytoplasm-modifying antibody, and it may be absent when the infection is most active. The skin test (Frenkel 1948) may prove negative in both the active and the latent forms of toxoplasmosis.

Sabin et al. (1952) point out that a large proportion of the normal adult population possesses the cytoplasm-modifying antibody, the incidence increasing to 50% or more with increasing age, but rarely is the titre of 1 : 64 exceeded. Beverley and Beattie (1952) found that only 2% of adults in the Sheffield region gave a dye-test titre of 1 : 64, and none above. Beattie (unpublished) examined 232 sera referred for the Wassermann reaction for toxoplasma complement-fixing antibodies. Only 1 reacted to a titre of 1 : 10, and 2 more to a titre of 1 : 5. The titres for the dye test in our first 2 cases (1 : 9000 and 1 : 12,800) and for the complement-fixation test (1 : 32 and 1 : 80) are so high that there is no doubt that the diagnosis of toxoplasmosis was justified. Admittedly, the only incontrovertible proof, the isolation of the parasite, which was attempted in case 2, was not obtained. Probably this was because the animal passages were not done sufficiently early in the disease.

The American Committee on Toxoplasmosis (Sabin et al. 1952) suggests that, for proof of active infection, the dye test should increase eightfold or more to a titre of at least 1 : 256, and should be maintained at or near that level for several weeks. During this time the level of the complement-fixing antibody should either change from negative to positive and rise to a titre of at least 1 : 8 or, if positive initially, should subsequently increase at least fourfold. The committee also recommends that repeat testing of earlier specimens be done in the same batch as later specimens before concluding that the necessary eightfold or fourfold rise has taken place.

Case 3 is reported with some hesitation because it does not completely fulfil the above-mentioned postulates. The rise in dye-test titre was only fourfold, but this may have been because the first test was performed on a serum collected on the eighteenth day of illness. We could reasonably expect antibodies to have appeared and risen to a titre of 1 : 64 by then. The titre was maintained at above 1 : 256 for four weeks and then fell through twelve weeks to 1 : 53. The rise in the level of the complement-fixing antibodies was at least fourfold and was maintained for seventeen weeks. Titrations of later and earlier specimens were not, however, done in parallel. Again, unfortunately, the parasite was not isolated, and this may well have been due to the time lag between the taking of the specimens and their inoculation into the mice. This case was complicated by the associated presence of low-titre antibodies in the Weil-Felix reaction. Nevertheless, Dr. Felix thought that the low titres obtained, which did not rise or fall over a period of four months, did not substantiate the previous diagnosis of Brill's disease which had been considered.

This paper points to the existence of acquired toxoplasmosis of the glandular type in this country and to the possible presence of the severer typhus-like form. The glandular type seems to be of the greater interest and importance for future investigation. Cases of lymphadenopathy with no apparent cause are not uncommon in clinical practice, and they might well be investigated as possible examples of acquired toxoplasmosis, more particularly if mild glandular fever is suspected but the Paul-Bunnell reaction is negative. The frequency with which abnormal forms of lymphocytes appear in acquired toxoplasmosis is uncertain. Toxoplasmosis does not seem to be a common cause of glandular enlargement (Sabin et al. 1952), and we have examined the sera of 86 patients referred for the Paul-Bunnell reaction without finding any containing an antibody at diagnostic titre other than those of our first 2 cases. As Sexton et al. (1953) point out, toxoplasmosis should be considered in cases of obscure illness complicated by a maculopapular eruption and signs of pneumonia and meningeal irritation or encephalitis.

In addition to the dye test and the complement-fixation test, done preferably at intervals to ascertain any rise or fall in the titres, attempts to isolate the parasite may be made by inoculation of mice with C.S.F. and heparinised blood from cases of the exanthematic type, or gland tissue from cases with lymphadenopathy, but it is not suggested that the latter is a justifiable routine procedure when the illness is trivial, as in cases 1 and 2. At least 6 mice should be inoculated from each specimen by both the intracerebral and intraperitoneal routes. Blind passages should be carried out every four to six days, and it is advisable to retain some of the original mice for six months, in view of the possibility of the delayed onset of symptoms in them (Armstrong and MacMurray 1953).

The histological appearance of excised glands does not reveal any constant characteristic change. Ström (1951) described an "uncharacteristic inflammatory reaction"; Wahlgren (1951) subacute lymphadenitis with swelling of the reticular cells and agglomeration of eosinophils and plasma cells; Siim (1952) hyperplasia involving especially the reticulum cells in the follicular centres, the cells being large and pale, with big nuclei and many mitoses. To some extent the lymph-gland sections from case 2 resemble this. Forms resembling toxoplasma have not, apparently, been observed in lymph-glands.

The question of the source of human infection is of considerable interest. Domestic animals, particularly cats and dogs, have been suspected, but except in laboratory infections the mode of entry of the parasite into the body is unknown ; it may be by ingestion, by inhalation, or by the mediation of an ectoparasite (Weinman 1952, Winsser 1952).

Some investigations were made into the possible source of the infection in case 2, and it is suggested that the patient became contaminated in the butcher's shop where he worked. His employer's serum gave a positive dye test to a titre of 1 : 1600, and that of a bitch belonging to this man and that of a cat which was a frequent visitor to the shop gave titres of 1 : 93 and 1 : 200 respectively. Beverley et al. (1953) have found significantly higher antibody levels in people with much contact with animals than in the general population. Only in laboratory infections has the direct transmission of the disease from animals to man been demonstrated. There are 5 such examples, one of them fatal (Magnusson 1951, Ström 1951, Sexton et al. 1953). In 2 of these the infection resulted from pricked fingers.†

Unfortunately no really satisfactory treatment of toxoplasmosis has yet been found. The sulphonamides, particularly sulphadiazine, sulphadimidine, and sulphamerazine, have proved of some value in experimental infection in animals, and one of us (J. K. A. B.) has had encouraging results with diamino-diphenyl sulphone. For a full review of possible therapy see Eyles (1953).

Summary

Infection with *Toxoplasma gondii* may be either congenital or acquired.

The acquired variety is usually latent and symptomless, the diagnosis depending on the demonstration of antibodies in the serum.

Much more rarely the acquired infection causes active disease. This may be mild and simulate glandular fever, or may be severe and bear resemblance to typhus. 2 cases of the glandular variety and 1 possible case of the typhus-like form are described.

The diagnosis of acquired toxoplasmosis is discussed. Toxoplasmosis, though a rare cause of glandular enlargement, should be considered in cases of adenopathy of doubtful ætiology simulating glandular fever.

Our thanks are due to Dr. E. Blackburn and Dr. J. Colquhoun for their helpful collaboration in carrying out the blood-counts and Paul-Bunnell tests; and to Dr. H. E. Harding for the biopsy report on case 2. We also wish to thank Dr. M. Steel for permission to publish case 3 and for allowing us to use his clinical records ; Dr. H. Lawy for his pathological reports ; and Dr. A. Felix, F.R.S., for performing the Weil-Felix tests in case 3.

This work was assisted by a grant made to one of us (C. P. B.) from the Medical Research Council.

REFERENCES

Armstrong, C., MacMurray, F. G. (1953) *J. Amer. med. Ass.* **151**, 1103.
Beverley, J. K. A., Beattie, C. P. (1952) *J. clin. Path.* **5**, 350.
— — Roseman, C. (1953) *J. Hyg., Camb.* (in the press).
Campbell, A. M. G., Clifton, F. (1950) *Brain*, **73**, 281.
Duke-Elder, S., Ashton, N., Brihaye-Van Geertruyden, M. (1953) *Brit. J. Ophthal.* **37**, 321.
Eyles, D. E. (1953) *Amer. J. trop. Med. Hyg.* **2**, 429.
Feldman, H. A., Sabin, A. B. (1949) *Pediatrics*, **4**, 798.
Fisher, O. D. (1951) *Lancet*, ii, 904.
Franke, H., Horst, H. G. (1952) *Z. klin. Med.* **149**, 255.
Frenkel, J. K. (1948) *Proc. Soc. exp. Biol., N.Y.* **68**, 634.
Gard, S. (1951) *Nord. Med.* **45**, 352.
— Magnusson, J. H. (1951) *Acta med. scand.* **141**, 59.
Jacoby, N. M., Sagorin, L. (1948) *Lancet*, ii, 926.
Jankû, J. (1923) *Čas. Lék. čes.* **62**, 1021, 1054, 1081, 1111, 1138.
Magnusson, J. H. (1951) *Nord. Med.* **45**, 344.
Pinkerton, H., Henderson, R. G. (1941) *J. Amer. med. Ass.* **116**, 807.
— Weinman, D. (1940) *Arch. Path.* **30**, 374.

References continued at foot of next column

† Since this paper was written one of our laboratory workers has become ill after a finger prick and antibodies to a significant level have appeared in his serum. This case will be published later.

LIMITATION OF VITAL CAPACITY

THORACIC FORCE-VOLUME DIAGRAM AS A MEANS OF ANALYSIS

A. C. DORNHORST
M.D. Lond., M.R.C.P.
READER IN MEDICINE

H. B. KELLY
M.D. Lond., M.R.C.P.
LECTURER IN MEDICINE

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL, LONDON

THE vital capacity is so regularly reduced in thoracic disease that it is almost useless in diagnosis. But what actually limits a patient's vital capacity is often not obvious, and if several factors are involved their separate assessment should yield more useful information than is given by their resultant. The force-volume diagrams to be described display the relative importance of the limiting

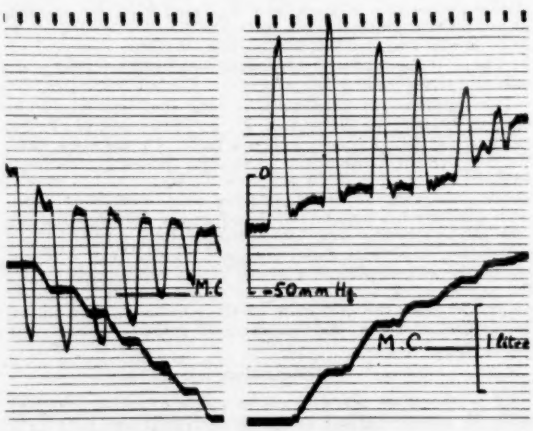


Fig. 1—Normal subject. Upper trace, intrathoracic pressure ; lower, spirometric record with inspiration downwards. Showing variation of maximal inspiratory (left half) and expiratory (right half) efforts with change of lung filling. The location of the mid-capacity (M.C.) differs in the two parts of the record.

factors. The diagrams are similar in principle to that constructed by Rahn et al. (1946) for normal subjects but differ in the pressure-variable used.

Methods

Intrathoracic pressure was recorded by means of an œsophageal tube (Dornhorst and Leathart 1952), respired volumes by a Benedict spirometer fitted with a potentiometer for electrical recording (Dornhorst et al. 1953).

Results

The procedure is illustrated in figs. 1 and 2. At various stages of lung filling the observer obstructs the airway

DR. SKIPPER AND OTHERS : REFERENCES—*continued*

Sabin, A. B. (1941) *J. Amer. med. Ass.* **116**, 801.
— (1949) *Pediatrics*, **4**, 443.
— Eichenwald, H., Feldman, H. A., Jacobs, L. (1952) *J. Amer. med. Ass.* **150**, 1063.
— Feldman, H. A. (1948) *Science*, **108**, 660.
Sexton, R. C. jun., Eyles, D. E., Dillman, R. E. (1953) *Amer. J. Med.* **14**, 366.
Slim, J. C. (1951) *J. Amer. med. Ass.* **147**, 1641.
— (1952) *Acta path. microbiol. scand.* **30**, 104.
Ström, J. (1951) *Acta med. scand.* **139**, 244.
Thalhammer, O. (1951) *Wien. klin. Wschr.* **63**, 565.
Verlindi, J. D., Makstenieks, O. (1951) *Nederl. Tijdschr. Geneesk.* **95**, 2050.
von Zeipel, G., Linder, L. A. (1951) *Acta path. microbiol. scand.* **29**, 229.
Wahlgren, F. (1951) *Nord. Med.* **45**, 349.
Weinman, D. (1952) *Annu. Rev. Microbiol.* **6**, 281.
Winsser, J. (1952) *Ergebn. Hyg. Bakt.* **27**, 1.

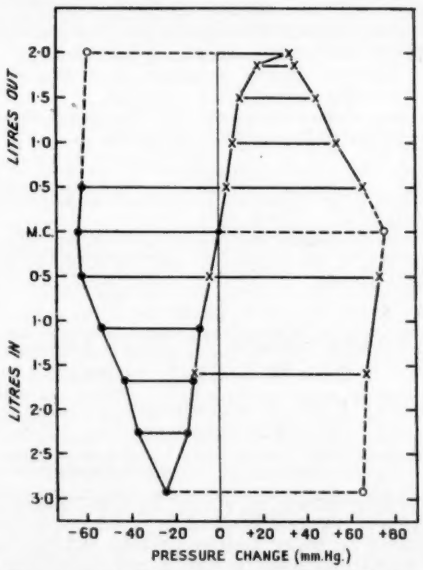


Fig. 2—Diagram constructed from data contained in fig. 1 (continuous lines) and in other parts of the same record (interrupted lines). Maximal inspiratory and expiratory, and equilibrium pressures are plotted at various volumes.

by gripping the spirometer tubing while the subject makes a maximal inspiratory, or expiratory, effort. The resulting pressures, together with the equilibrium, open-airway pressures, are plotted against their corresponding volumes. For convenience both pressure and volume are plotted as alterations from their mid-capacity values. No correction is made for compression or expansion of the gas in the lungs during the efforts. Fig. 2 is a representative normal result. The slightly sigmoid line of open-airway pressures characterises the lung distensibility and compressibility; the maximum width of the diagram is a measure of the available muscle force, while the rate of decline of force with change of lung filling is a further characteristic, probably reflecting the posture and mobility of the thoracic cage. It will be seen that the maximal inspiratory force varies little between full expiration and mid-capacity, but falls off steadily with further inspiration until it no longer exceeds that needed to keep the lungs expanded. Similar remarks apply, *mutatis mutandis*, to the expiratory force.

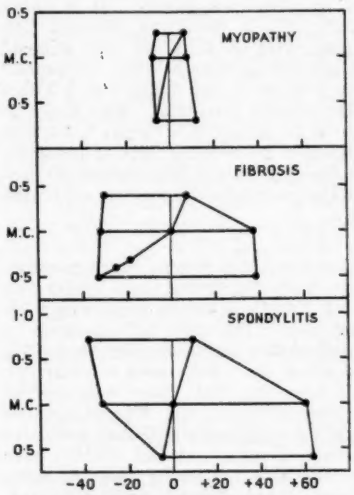


Fig. 3—Diagram from three patients with grossly limited vital capacity. The scales and method of plotting are as in fig. 2.

In work with patients it is usually neither practicable nor necessary to obtain as many points as in fig. 2: the diagram is sufficiently characterised by the six points giving inspiratory and expiratory force at maximum, mid, and minimum capacities; additional points may be needed in regions of special interest. Diagrams of this type were constructed for twenty patients with limitation of vital capacity associated with various disorders. As was expected, different patterns could be recognised indicating different mechanisms of limitation. Diagrams of three cases with vital capacity of about 1 litre, selected to illustrate those patterns, are shown in fig. 3. In the upper diagram the way in which the muscle weakness limits expansion is apparent. The middle diagram is from a case of severe fibrosis associated with heavy radiotherapy: the poor distensibility, entailing an exaggerated negative intrathoracic pressure on inspiration is the leading abnormality. The third case was one of ankylosing spondylitis in inactive phase with fixed thoracic cage. The available force is adequate at mid-capacity but falls off too rapidly with volume changes so that inspiration ceases after a pressure-drop of only some 5 mm. Hg.

In most patients more than one factor was acting to limit the vital capacity. A case of silicosis, with radiological "massive fibrosis" may be taken as an example (fig. 4). Here the inspiratory force, adequate in full expiration, has dropped some 30% at mid-capacity, supporting the clinical impression that the patient's respiratory movements lay within what had been in health the inspiratory side of his vital capacity. This would, however, not explain the rapid reduction of expiratory power with expiration, which resembles that in the patient with spondylitis and suggests a similar origin in chest-wall fixity. This patient also

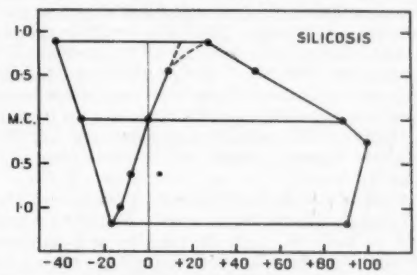


Fig. 4—Diagram from patient with moderately limited vital capacity.

exhibits a moderate decrease in lung distensibility and a defect of compressibility shown by the rapid rise in pressure entailed by an expiration exceeding about half a litre. This abrupt change in the pressure-volume relations of the lung during expiration is not uncommon: it is well shown in fig. 5. Its significance is discussed below.

Discussion

The procedure proved easy to perform even with severely incapacitated patients if plenty of rest was allowed between measurements, but severe bronchospasm occasionally made the pressure records difficult to interpret. As with determination of maximum breathing capacity or of vital capacity alone, one is dependent on the patient's full coöperation. Consistency during a session appeared of the same order as with these procedures—no attempt was made to estimate day-to-day reproducibility.

The normal drop in force with volume change presumably occurs as the respiratory muscles progressively move into positions of decreased mechanical advantage or reach their maximum shortening. There are several possible reasons for exaggerated force-drop in disease. A change in mid-position will entail the movements in one direction being performed in the mechanically disadvantageous region of the diagram. For example, an increase of residual air in emphysema will mean that

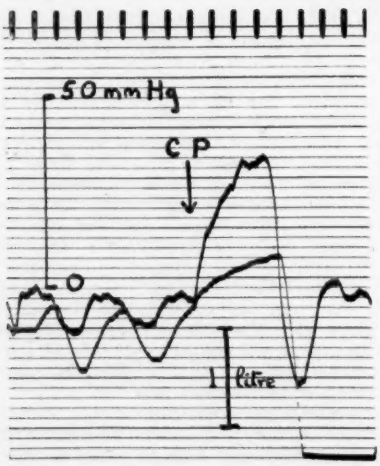


Fig. 5—Early emphysema. Upper trace, intrathoracic pressure ; lower, spirometric record. Illustrating the abrupt rise in pressure as the expired volume passes a critical point (C.P.).

the inspiratory force has, as in fig. 4, already decreased materially at the new mid-position. Fixity of the thoracic cage would be expected to exaggerate the force-drop in both directions since, when some of the respiratory muscles are unable to contribute, volume change requires a greater than normal movement of the remainder. It is also conceivable that muscle force might be absorbed in deforming a fixed cage. This force would be recoverable and should reinforce the muscles when an effort is made in the opposite direction. The result would be that the drop in, say, expiratory force with expiration would be accompanied by a comparable increase in inspiratory force. This is not usually the case (see fig. 3), and it therefore appears that this mechanism is not important.

The sudden rise of intrathoracic pressure at the end of expiration is of some importance. We have repeatedly observed it both in normals (fig. 1) and in patients. Similar rises can be observed in patients with a tracheostomy (Bateman et al. 1952) and in the pressure in a shallow pneumothorax ; we therefore believe it to denote a true lack of pulmonary compressibility, which we attribute to air trapping. In the normal subject the change in pressure-volume relationship occurs only after expiration of 1·5–2 litres in the last fraction of expiratory reserve. In some emphysematous patients the change occurs abruptly after only a few hundred millilitres have been expired : in such a posture the expiratory force may still be considerable, and so the pressure rises to high levels without much apparent effort. Both in normal and emphysematous subjects the change occurs at about the position in which the intrathoracic pressure reaches the atmospheric—that is, when the lungs no longer exert an elastic pull. It may be that some elastic tension on the bronchiolar walls is required to prevent their closure during expiration. A similar conclusion was reached by Dayman (1951) after an investigation of breathing dynamics in emphysema.

In some of our emphysematous patients expiration appeared to be limited by chest stiffness rather than by trapping. We suspect that this represents a later stage of the process in which the thoracic cage loses its range of mobility through disuse. The method described in this paper could decide this aspect of the natural history of emphysema. We suggest, too, that it may assist in evaluating the effects of therapeutic procedures such as breathing exercise and pneumoperitoneum.

Summary

A method, suitable for clinical use, for constructing the thoracic force-volume diagram is described.

Lung changes, muscle weakness, and thoracic-cage stiffness produce characteristic patterns.

The phenomenon of alveolar-air trapping is described with particular reference to emphysema.

REFERENCES

Bateman, G. H., Dornhorst, A. C., Leathart, G. L. (1952) *Brit. med. J.* ii, 1177.
Dayman, H. (1951) *J. clin. Invest.* **30**, 1175.
Dornhorst, A. C., Leathart, G. L. (1952) *Lancet*, ii, 109.
— Semple, S. J. G., Young, I. M. (1953) *Ibid*, i, 370.
Rahn, H., Otis, B. O., Leigh, E. C., Fenn, W. O. (1946) *Amer. J. Physiol.* **146**, 16.

AIR-CONDITIONING WITH FILTERED AIR FOR DRESSING BURNS

E. J. L. LOWBURY
M.A., B.M. Oxfd
BACTERIOLOGIST, MEDICAL RESEARCH COUNCIL BURNS RESEARCH UNIT, BIRMINGHAM ACCIDENT HOSPITAL

THE contamination of air by bacteria shaken from dressings and blankets is transient in a room ventilated with filtered air under positive pressure but cumulative if the ventilation plant is not in use (Bourdillon and Colebrook 1946). After three years, during which burns in this Unit were dressed in an air-conditioned room, Colebrook et al. (1948) reported a considerably lower incidence of *Streptococcus pyogenes* in burns than had been found in previous surveys (Cruickshank 1935, Colebrook et al. 1945).

Some of this improvement could be attributed to local penicillin prophylaxis, which was introduced at the same time as the air-conditioned dressing-station and has since been shown to cause a large reduction of added infection with *Strep. pyogenes* (Jackson et al. 1951a). To find what part, if any, of this improvement was caused by the supply of filtered air in the dressing-station, we made a controlled trial of the effect of such ventilation during dressings on the infection of burns. This study is described here.

Controlled Trial of Air-conditioned Dressing-station

Dressing-station

This room, which is slightly modified from the original, has been described by Colebrook (1950). It is about 3000 c. ft. in capacity, and is ventilated, through four diffusers on the ceiling, with air that has been pumped from an inlet above the roof through a Vokes ' Kompak ' cotton-wool filter to remove coarse debris and a Vokes ' Multivee ' filter for smaller particles. Air, which is admitted at the rate of 20 turnovers an hour, is warmed to 70–75°C and humidified to 50–60% relative humidity before it reaches the dressing-station, and escapes through a 2-inch gap under the door into an air-lock ventilated by an extractor fan.

Conduct of Trial

During seven months, patients whose burns required a change of dressings were distributed each morning in three lists which took the place of the usual single list of dressings for the day. The first list consisted of " shock " cases (patients with burns of more than 15% area in adults, and more than 10% area in children), which were excluded from the trial ; they were dressed with the usual procedure in filtered air. The second and third lists were made up of patients with less extensive burns ; those with even hospital numbers (E list) were always dressed with the air-conditioning plant running, whereas those with odd hospital numbers (O list) were dressed in the same room by the same dressing team but with the ventilation plant switched off. The order in

TABLE I—BACTERIA IN BURNS DURING TRIAL OF AIR-CONDITIONED DRESSING-STATION

Bacteria in burns after 1st day	Burns dressed in filtered air				Burns dressed in unfiltered air				χ^2	P
	Present	Absent	Total	% present	Present	Absent	Total	% present		
Ps. pyocyanea	24	114	138	17·4	60	97	157	38·2	14·67	<0·001
Proteus	33	103	136	24·3	62	97	159	38·9	6·63	<0·01
Staph. aureus RR *	32	92	124	25·8	60	86	146	41·1	5·99	<0·02
Staph. aureus SR *	26	96	122	21·3	44	100	144	30·5	Not significant	
Staph. aureus SS *	14	113	127	11·0	12	141	153	7·8	,,	,,
Strep. pyogenes	14	120	134	10·4	26	133	159	16·3	,,	,,
Coliform bacilli	40	89	129	31·0	46	104	150	30·7	,,	,,

* RR, resistant to aureomycin and penicillin; SR, sensitive to aureomycin and resistant to penicillin; SS, sensitive to both aureomycin and penicillin.

which E and O lists were dressed was changed every week. The dressing-station was left empty for five minutes between dressings in each list. Between each of the three lists the air-conditioning plant was allowed to run for fifteen minutes, during which the dressing-station was empty. Burns with *Strep. pyogenes* were dressed at the end of each list, and those with *Pseudomonas pyocyanea* were dressed immediately before them.

Bacteriological Methods

Moist swabs were taken from the burns and the nares of patients in the trial on admission, at every dressing, and at every operation. They were examined for aerobic bacteria by methods which have been described in detail elsewhere (Jackson et al. 1951a and b). The examination included penicillin and aureomycin sensitivity tests by the ditch-plate method and phage-typing of all coagulase-positive staphylococci (*Staphylococcus aureus*); Lancefield grouping of all β hæmolytic streptococci; the use of cetrimide agar and examination under an ultraviolet lamp with dark glass filter for the detection of *Ps. pyocyanea* (Lowbury 1951); and urea slopes for the detection of presumptive proteus strains (Cook 1948).

RESULTS

Bacteria in Burns

Table I shows an analysis of the aerobic bacteria isolated from the burns of patients admitted during the seven months of the trial. For each organism the swab results from burns in which the bacteriology was negative or unknown on admission are tabulated together; burns known to be carrying an organism on admission were omitted from the assessments of that organism. All swab results were included up to the time when dressings were finally discarded.

The numbers of *Ps. pyocyanea*, proteus, and *Staph. aureus* resistant to aureomycin and penicillin were significantly greater in the burns dressed without air-conditioning than in those dressed while the plant was running. A similar trend, which did not, however, reach statistical significance, was found with *Strep. pyogenes* and with *Staph. aureus* sensitive to aureomycin and resistant to penicillin. The numbers of staphylococci sensitive to both antibiotics was slightly (but not significantly) lower in the control burns; this may reflect a delay in their supersession by antibiotic-resistant hospital strains of *Staph. aureus* in burns of the E list.

The value of air-conditioning in the dressing-station was most clearly shown by its effect on the incidence of *Ps. pyocyanea*. Of 138 burns dressed in filtered air 24 (17·4%) acquired *Ps. pyocyanea*, compared with 60 (38·2%) out of 157 control burns ($\chi^2 = 14·67$; $P<0·001$). The difference expressed in terms of patients was also significant: 12 (17·4%) out of 69 dressed in filtered air, and 25 (35·2%) out of 71 control patients acquired *Ps. pyocyanea* ($\chi^2 = 7·44$; $P<0·01$).

An analysis of the added infections month by month showed that the same trend was maintained throughout the trial.

Staph. aureus in Nose

Staphylococci in the nares of patients on arrival in this hospital have usually been sensitive to penicillin and have almost always been sensitive to aureomycin; but these strains are commonly superseded by resistant staphylococci, most of which belong to the 6/47 phage group (Lowbury et al. 1952). The proportions of antibiotic-resistant staphylococci or of staphylococci in the 6/47 group isolated from the patients' noses therefore gives some clue to the frequency with which staphylococci are picked up from the environment.

An analysis of the incidence of *Staph. aureus* in nose swabs from patients in the trial is shown in table II. Both antibiotic-resistant staphylococci and strains in the 6/47 group were present in significantly higher proportions in the noses of patients whose dressings were changed when the air-conditioning plant was switched off. A large proportion of the added staphylococci belonged to type 75B, which has become the predominant resident strain in the Burns Unit, and is often resistant to penicillin and to aureomycin.

Efficiency of Air-conditioning Plant

To test the efficiency of the air-conditioning plant the bacterial flora of air in the dressing-station was examined with the slit sampler during dressings in the O and E lists on one day. The results described by Bourdillon and Colebrook (1946) were confirmed in these tests, which showed during the E list transient peaks of up to 130 colonies from 1 c. ft. of air during removal of dressings followed by a rapid decrease to less than 5 colonies per c. ft.; during the O list the increase in bacteria during removal of dressings was not followed by a rapid decrease, and many organisms from the previous dressing were still present in the air when a new case was wheeled into the dressing-station.

Comparability of Cases

There was no significant difference in age, sex-distribution, and area of burns of odd-numbered and of even-numbered patients in the trial.

TABLE II—ANTIBIOTIC-RESISTANT AND HOSPITAL STRAINS OF *Staph. aureus* ISOLATED FROM NARES AFTER FIRST DAY AND DURING FIRST THREE WEEKS IN HOSPITAL

Staphylococci in nares after 1st day	Patients dressed in filtered air				Patients dressed in unfiltered air				χ^2	P
	Present	Absent	Total	% present	Present	Absent	Total	% present		
Antibiotic-resistant staphylococci	26	35	61	42·6	39	18	57	68·6	6·97	<0·01
Hospital strains of staphylococci (6/47 group)	19	45	64	29·7	33	27	60	55·0	7·26	<0·01

Discussion

The use of air-conditioning with filtered air to protect burns from infection while they are being dressed is justified by the results of this experiment. Its effect would, undoubtedly, have been greater if lists as long as the normal dressing-lists had been compared in the trial. On some days there was only one case in the E or the O lists. Probably the inclusion of shock cases, which cause a heavier bacterial contamination of air at dressings, would also have increased the effect. Our results may therefore understate the probable value of the dressing-station.

The time spent by a patient in the dressing-station is very small in comparison with the whole time that he spends in hospital. The results of the trial of air-conditioning, however, support the view that both burns and noses may often acquire new flora during this period, presumably because large numbers of bacteria are dispersed into the air from dressings. The other occasion when burns are likely to become contaminated from the air is during their exposure in the operating-theatre. The usual ventilation with extractor fans may actually increase this risk by drawing in dust-laden air from the floors of corridors or staircases outside the theatre (Sevitt 1949, 1953).

Like prophylaxis with antibiotics, the use of an air-conditioned dressing-station with filters can only be expected to cause a relative reduction in the rate of added infection of burns. Better results may therefore be expected from the use of both methods together than by using either alone. Some organisms were more effectively excluded by air-conditioning than others. It was perhaps surprising that the effect was greater on *Ps. pyocyanea* than on *Staph. aureus* and *Strep. pyogenes*, for the first of these organisms has been shown to be less tolerant of drying in air than the two latter (Lowbury and Fox 1953). Nevertheless we have found large numbers of *Ps. pyocyanea* in the air during the dressing of some heavily infected burns. Probably *Staph. aureus* and the coliform bacilli were less affected by air-conditioning because their normal reservoirs in the body are much more numerous than those of *Ps. pyocyanea*. *Strep. pyogenes*, on the other hand, has fewer reservoirs and occurred less often in burns. The practice of dressing at the end of the lists burns known to be carrying the organism may have contributed to the small effect of air-conditioning on its incidence in the trial; even so, there was a higher proportion of burns with *Strep. pyogenes* in the O than in the E list, and this difference would have reached statistical significance in a longer trial if the observed trend was continued.

The apparent protection of the nose against *Staph. aureus* when patients were dressed with the air-conditioning plant on may have been due directly to the inhalation of fewer staphylococci during the dressing or indirectly to the delayed infection of burns, from which the nose may then have become contaminated. Whatever the reason, this prophylactic effect, unlike that of the antibiotics, need not be expected to lose its value through the emergence of mutant staphylococci capable of withstanding it.

The clinical value of protecting burns against *Strep. pyogenes* and *Ps. pyocyanea* has been demonstrated by studies on the graft results and healing-time of burns during trials of antibiotics (Jackson et al. 1951a and b). In the light of the present trial it seems likely that the healing of burns treated by the closed method may be accelerated through the use of air-conditioned dressing-stations.

This trial of air-conditioning and our previous trial of local penicillin prophylaxis have proved Colebrook's foresight in introducing both methods for the routine treatment of burns. It is probable that there would be a further appreciable fall in the rate of added infection if air-conditioning plants with filters were also installed in operating-theatres and shock rooms.

Summary

The effect on the infection of burns of ventilating a dressing-station with filtered air under positive pressure was studied in a controlled trial.

Out of 138 burns routinely dressed in the air-conditioned room 24 (17·4%) were infected with *Ps. pyocyanea* at some time after the day of admission, compared with 60 (38·2%) out of 157 burns dressed in the same room with no air-conditioning ($\chi^2 = 14{\cdot}67$; $P < 0{\cdot}001$). Smaller but significant effects were also found with *Staph. aureus* and proteus, and there was a similar trend with *Strep. pyogenes*.

The noses of patients dressed in the air-conditioned room acquired a significantly lower proportion of staphylococci resistant to penicillin and aureomycin and of hospital strains of *Staph. aureus* (6/47 phage group) than did those of the control patients.

The use of positive-pressure ventilation with filtered air for dressing-stations gains support from these results, and its extension to operating-theatres and shock rooms is recommended.

I wish to thank members of the nursing and laboratory staffs for their valuable help in this study, and my colleagues at the Birmingham Accident Hospital for advice and criticism.

REFERENCES

Bourdillon, R. B., Colebrook, L. (1946) *Lancet*, i, 561, 601.
Colebrook, L. (1950) A New Approach to the Treatment of Burns and Scalds. London.
— Duncan, J. M., Ross, W. P. D. (1948) *Lancet*, i, 893.
— Gibson, T., Todd, J. P., Clark, A. M., Brown, A., Anderson, A. B. (1945) *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 249, p. 16.
Cook, G. T. (1948) *J. Path. Bact.* **60**, 171.
Cruickshank, R. (1935) *Ibid*, **41**, 367.
Jackson, D. M., Lowbury, E. J. L., Topley, E. (1951a) *Lancet*, ii, 137.
— — — (1951b) *Ibid*, p. 705.
Lowbury, E. J. L. (1951) *J. clin. Path.* **4**, 66.
— Fox, J. (1953) *J. Hyg., Camb.* **51**, 203.
— Topley, E., Hood, A. M. (1952) *Lancet*, i, 1036.
Sevitt, S. (1949) *Ibid*, ii, 1075.
— (1953) *Ibid*, ii, 1121.

Medical Societies

MANCHESTER MEDICAL SOCIETY

Brucellosis

AT a joint meeting of the sections of medicine and pathology on Jan. 13, a discussion on Brucellosis was opened by Dr. G. M. BARRETT. He said that acute brucellosis, with striking pyrexia and associated high agglutinin titre, was readily diagnosed, but chronic cases were probably vastly commoner; in their early stages these were unrecognised, and later, when medical advice was sought, they usually went undiagnosed. Failure to diagnose chronic brucellosis was due to lack of appreciation of the clinical picture and unjustified reliance on agglutination reactions and blood or bone-marrow cultures. The clinical manifestations of chronic brucellosis, though as protean as those of the other granulomatous diseases, tuberculosis and syphilis, showed a fairly constant basic pattern. Excessive sweating, diffuse muscle pains, and easy fatigability were found in over 80% of cases; chills or rigors, abdominal disturbances, and arthralgia were other common symptoms. Careful physical examination was important since in 50 consecutive cases hepatic enlargement had been found in 22 and splenic enlargement in 15. There was no great variation in the incidence of different symptoms or physical signs between various groups of patients whose agglutination reactions were initially negative, weakly positive, or strongly positive. After intradermal injection of brucellin, the majority of patients with active brucellosis showed a striking rise of antibody titre which persisted for many months or until effective treatment was given. The occasional slight rise of titre in control cases judged clinically not to have active brucellosis

seldom persisted for more than a few weeks; and thus the brucellin skin test, like the Mantoux reaction, was a valuable screening-test. The brucellin skin test, however strongly positive, was not by itself to be taken as evidence of active disease. In all clinically doubtful cases aspiration liver-biopsy should be done, and the specimen be examined histologically for nodular granulomata and cultured for brucella organisms. The newer antibiotics produced a striking immediate improvement in the majority of cases, but often the long-term results were disappointing. Of the 50 cases reviewed 14 had already returned for a second course of treatment, and 3 for a third course; and 5 patients were considered still to have active disease. The standard treatment given was aureomycin and dihydrostreptomycin (2 g. of each daily for two weeks); protein-shock therapy with intravenous T.A.B. vaccine was given twice in the first week of treatment. Prevention was important: the high incidence of the disease in the North Lancashire and South Westmoreland area was directly related to the large amount of raw milk consumed.

Dr. A. G. RICKARDS, searching for incomplete brucella antibodies, had tested 322 sera referred to him for brucella-antibody content, by means of a Coombs reagent. Although incomplete agglutinins were often present, he held that the test for incomplete antibodies, as at present developed, was of no value in the diagnosis of active brucellosis. He had also examined 200 sera for brucella-antibody content, using two different suspensions. The results underlined the necessity for standardising suspensions and techniques throughout the country if antibody titrations in different laboratories were to be comparable. Essentially the morbid anatomical lesions in brucellosis comprised widely disseminated nodules of epithelioid and giant cells, which could be termed "tuberculoid lesions." Dr. Rickards maintained that these lesions were often indistinguishable, histologically, from those of other diseases characterised by disseminated tuberculoid granulomata—notably hepatic lesions in tuberculosis, erythema nodosum, syphilis, sarcoidosis, "giant-cell granuloma," and beryllium poisoning. Because of the rather indefinite clinical findings and the diagnostic difficulties, brucellosis was in danger of becoming a "fashionable" disease. Brucellosis should never be diagnosed unless at least one of the following criteria was satisfied: (*a*) isolation of the organism, (*b*) presence of serum agglutinins, or (*c*) presence of tuberculoid lesions in the liver or bone-marrow.

Reviews of Books

Diseases of Muscle

A Study in Pathology. RAYMOND D. ADAMS, M.D., associate clinical professor of neurology, Harvard Medical School; D. DENNY-BROWN, M.D., F.R.C.P., James Jackson Putnam professor of neurology in the school; CARL M. PEARSON, M.D., former resident in pathology, Mallory Institute of Pathology, Boston City Hospital. London: Cassell. 1953. Pp. 556. 118*s.* 6*d.*

FOR many decades the seeker after recorded knowledge of the diseases affecting the skeletal muscles has had no alternative to the original articles in the journals. Textbooks dismiss the subject in a few pages. Considering that the adult human body contains 40–45% of muscle this neglect seems astonishing, but it may be due to the complexity of the subject, the difficulty of assessing artefacts in histological preparations, and our imperfect knowledge of the intrinsic chemistry of muscular activity. Moreover in clinical work the muscles are not the particular concern of any special department. The present work from Boston stops the gap with a most scholarly and admirably produced volume which, despite the neurological bias of its authors, is comprehensive and well-balanced.

The first part reviews the embryology and normal histology of muscle, the second describes the pathological reactions of muscle, and the third is devoted to the pathology of muscle diseases. Each of the thirteen chapters carries a substantial list of references, often exceeding 100, which have been discussed in the text; and, unlike so many current American publications, the book gives due place to European literature. Most of the excellent figures (189 in all) are photomicrographs; they serve their purpose admirably.

The second part is divided into two chapters. The first, on experimental pathology, gives in detail the changes following denervation and the reactions of muscle to different forms of physical and chemical injury, disorders of circulation, infections, and vitamin deficiency. The other chapter traces the general reactions of human muscle in various disease processes.

Lack of precise knowledge of the ætiology has often troubled the authors in preparing the classification of muscle diseases set out in the third part. They have therefore, when necessary, based their separation on morbid anatomy. But they have finally been defeated, and the last two chapters on "miscellaneous diseases" comprise (*a*) toxic, metabolic, and endocrine diseases, and (*b*) disorders of excitability and contractility—e.g., myasthenia gravis.

This book will be valued wherever and whenever information on muscle pathology is needed, and the authors are to be congratulated on having marshalled so much accurate and up-to-date information into such a compact form.

Sigmund Freud

Life and Work. Vol. 1: The Young Freud 1856–1900. ERNEST JONES. London: Hogarth Press. 1953. Pp. 454. 27*s.* 6*d.*

THE task before Dr. Ernest Jones was in many ways more formidable than that of other biographers. They may struggle with meagre and contradictory material; they may be divided between devotion to a revered master or a dead friend and the obligation of the historian to paint his subject, warts and all, with his foibles as plain as the beauties of his character and intellect. But they do not have the psycho-analyst's compulsion to strip the mask from attainments and virtues, disclosing the ignoble elements in nobility and the crude appetities that lie behind high achievement. What has in this way been done by psycho-analysts to Poe, Carlyle, and Baudelaire would hardly come easily to the pupil, friend, and admirer of Freud, writing his life with the consent of his family. Fortunately, as was to be expected, Dr. Jones has shown tact and good sense; he has abstained from speculative flights, and does his utmost to give a detailed factual account of Freud's life. Here and there an association that may have been significant in his emotional development is pointed out, a hidden influence guessed at, but as a whole the biography follows classical models. In his exactitude and closeness to his subject Dr. Jones is as admirable as in the integrity which leads him to record weaknesses and excesses. Most readers will regret the omission of those telling scraps of conversation and vignettes of description which Boswell taught us to value; perhaps these will appear in the later volumes, or perhaps Dr. Jones feels that lively touches such as these are inappropriate to his stated purpose—in which he notably succeeds—of relating Freud's personality and the experiences of his life to the development of his ideas.

This is an informative and impressive account of the turbulent, chequered development of a genius.

Progress in Venereology

R. R. WILLCOX, M.D. Lond., consultant senior assistant venereologist, St. Mary's Hospital, London. London: Heinemann Medical Books. 1953. Pp. 195. 21*s.*

IN this summary of all that has been written about the venereal diseases during the past seven years, Dr. Willcox gives us a bird's-eye view of work in this field with occasional interpolations from his own ideas. He is a man of industry, and, on the whole, he covers the ground well.

Though the material is necessarily much compressed, it is easy to read and is divided into appropriate subsections each containing a list of references, preceded by a brief summary of the contents of each publication. Among his formidable

total of 1700 references most important publications are to be found; though some of the less important might have been omitted with advantage. Dr. Willcox's advocacy of the use of antibiotics for what is usually called prophylaxis, but should really be called abortive treatment, is open to criticism. The inclusion of non-venereal diseases such as yaws, bejel, and pinta might also be criticised, though the World Health Organisation has recruited some venereologists to take part in campaigns against these diseases. Some of the interesting illustrations are not truly relevant to the text, and occupy valuable space in so strictly utilitarian a volume, and the racy style is not always appropriate.

A book of this kind inevitably falls out of date soon after publication, but for the moment Dr. Willcox offers his colleagues much readable information and a little of what they may regard as light entertainment.

Pictorial Introduction to Neurological Surgery

G. F. ROWBOTHAM, F.R.C.S., neurological surgeon, Royal Victoria Infirmary, Newcastle upon Tyne; D. P. HAMMERSLEY. Edinburgh: E. & S. Livingstone. 1953. Pp. 108. 21*s*.

NEUROSURGEON and artist have here joined forces to produce for the general surgeon confronted with a neurological emergency a manual on neurosurgical techniques which cannot fail, at such a time, to offer him considerable help and comfort. Good paper, clear illustrations, and a readable text combine to make a pleasant, concise book.

The book does not, however, fully live up to its title; for neurosurgery—even emergency neurosurgery—is not confined to the treatment of trauma to the head. A description of a decompressive laminectomy, and an outline of modern peripheral-nerve surgery might well have been found a place; if necessary supplanting descriptions of repairs for cerebrospinal fluid fistulæ, and operations for repair of skull defect and excisions of meningocerebral scars, none of which are likely to come under the care of a general surgeon. However, there are always differences of opinion of what to include in a book which does not set out to be comprehensive, and Mr. Rowbotham fairly states that the work is intended to be used as a series of "hat pegs."

The teaching and advice given in the text is thoroughly sound and factual and few criticisms can be made on points of detail.

No mention is made that electrocorticography is essential if meningocerebral scars are to be excised adequately. To sever the edge of the tentorium in any case of extradural hæmatoma which has not recovered consciousness within half an hour after subtemporal decompression is usually a procedure of utmost difficulty, and the alternative method of relieving herniation by retrograde instillation of sterile saline solution from the lumbar subarachnoid space might have been mentioned.

Common Diseases of the Ear, Nose and Throat

(2nd ed.) PHILIP READING, M.S., F.R.C.S., surgeon to the ear and throat department, Guy's Hospital, London. London: J. & A. Churchill. 1953. Pp. 280. 22*s*. 6*d*.

THE second edition of this popular textbook will be welcomed by students, for it is easily read and well illustrated, and principles are clearly stated. The sections on vasomotor rhinitis, the tonsil problem, and the use of antibiotics are particularly good. Though it has been brought up to date, it has kept its modest proportions. But squeezing so large a subject into so small a space must lead to dogmatic teaching, and Mr. Reading sometimes has generalised too much.

For instance, otosclerosis deserves more space, and it would be wise to inform the student that a hearing-aid is nearly always of value even if the results of the fenestration operation are uncertain. It is surprising to read that malignant nasopharyngeal tumours invade the base of the skull to involve the 10th, 11th, and 12th cranial nerves, for these are affected rarely compared with the 6th and 5th. The laryngeal paralyses are confused by the artificial and unpractical separation of functional aphonia from adductor paralysis.

These criticisms of detail do not detract from the general value of a book that is full of useful aphorisms, such as "the size of a tonsil is an indication of its physiological activity, not of its guilt" and "clinical medicine does not consist in prescribing antibiotics in blind obedience to the bacteriologist's report."

Medicine in Oxford

A Historical Romance. MAURICE DAVIDSON, M.A., D.M. Oxfd, F.R.C.P. Oxford: Basil Blackwell. 1953. Pp. 70. 10*s*. 6*d*.

THE FitzPatrick lectures, delivered at the Royal College of Physicians in 1952 and 1953, describe the background of Oxford life as it affected contemporary medicine from the origin of the university to the beginning of the Osierian era. Dr. Davidson wistfully recalls the classical learning and general culture of the medical graduates of the past, and, a classical scholar himself, he expects of his readers a good knowledge of Latin and Greek. No translations are provided. His earlier pages do not make easy reading and are hardly in accord with the word romance which he uses in his subtitle. He has included a dozen fine portraits which add distinction to the volume, but as a work of reference it suffers because it lacks an index.

Instrumental Detection of Deception

The Lie Test. CLARENCE D. LEE, captain of detectives, retd, police department, Berkeley, California. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1953. Pp. 268. 47*s*. 6*d*.

Mr. Lee has had much experience in the use of polygraph records for detecting the emotional change that may occur when a criminal is questioned about his crime. He is satisfied that a rise in blood-pressure is the most dependable criterion of deception so far discovered; his method of continuous recording does not, however, provide a measure of blood-pressure, but of amplitude of excursion when the cuff-pressure is kept below the diastolic blood-pressure.

He is an enthusiast, not only for his special instrument the "Lee psychograph" but for police work as a whole: "probably in no other human activity is there so vast a need at one time or another for drawing on so many of the arts and sciences as in the police service." Indeed, he goes beyond the application of "the arts and sciences" to police purposes, and proposes that employees, insured persons, and others should be "lie-tested" as a routine measure to keep them honest or to stop the dishonest from being accepted for employment. Mr. Lee assures the reader that, far from workers being upset by having to submit to deception tests, "after all have been tested a new spirit of mutual trust and confidence always prevails." But an earlier paragraph reporting that in a large chain-store 76% of the 14,000 employees tested on the first occasion were revealed as pilferers make this assurance difficult to swallow.

The book contains a mass of informative detail, but it would gain by a frank account of the failures and "false positives" which Mr. Lee has met in his own practice as a lie-detective.

Manual of Psychological Medicine (3rd ed. London: Baillière, Tindall, & Cox. 1953. Pp. 328. 25*s*.).—The new edition of this manual, by the late A. F. Tredgold and his son Dr. R. F. Tredgold, was completed shortly before the death of the senior author. It retains the easy personal style and rather insular approach of the first edition; and if it is old-fashioned, especially in its psychology, it is free from many of the typical defects of modern psychiatric textbooks. It successfully conveys a simple picture of what is known about mental disorder, and it will continue to be useful to practitioners and students for whom it was designed.

Whitaker's Almanac 1954 (London: Whitaker. Pp. 1190. 15*s*.).—Like a turbot, this popular book of reference gets bigger every year of its life. This year it has burgeoned, for the first time and at the ripe age of 86, into sixteen pages of photographic illustrations—of the Coronation and other outstanding events and personalities of 1953. Other additional items of information concern the Press Council, the Council of Industrial Design, the Historic Churches Preservation Trust, the London teaching hospitals, principal events in British music and opera, and the most important art and other exhibitions.

Mummy, this isn't medicine — it's nice!

When medicine is "nice to take" the doctor's work is considerably lightened. This is the secret of the success of Suspension Chloromycetin Palmitate. A pleasantly-flavoured preparation containing a tasteless derivative of Chloromycetin, each 4c.c. (teaspoonful) is therapeutically equivalent to 125mg. Chloromycetin. It hydrolyses readily in the gastro-intestinal tract, yielding the pure antibiotic. It can thus be easily administered both to infants and children and to those unable to take capsules, for the successful treatment of bacterial, viral or rickettsial infection.

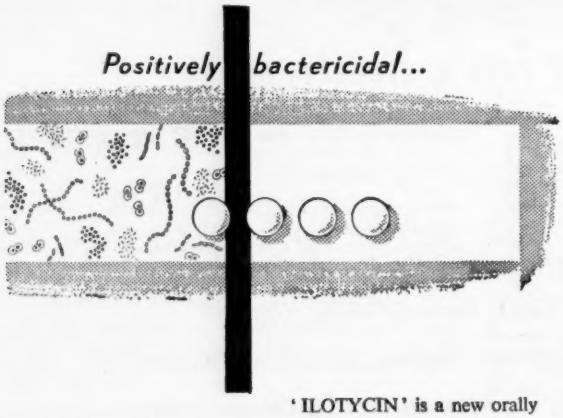
SUSPENSION
CHLOROMYCETIN
PALMITATE

indicated in the treatment of
PERTUSSIS · INFANTILE GASTRO-ENTERITIS
LARYNGO-TRACHEO-BRONCHITIS
BACTERIAL PNEUMONIA · SURGICAL
INFECTIONS · PRIMARY ATYPICAL PNEUMONIA
MENINGITIS · SALMONELLOSIS
URINARY TRACT INFECTIONS
DYSENTERY · SEPTICAEMIA

PARKE, DAVIS & Company, Limited *Inc. U.S.A.* Hounslow, Middlesex Telephone: Hounslow 2361

113

Positively bactericidal...



TRADE MARK **'ILOTYCIN'** BRAND

ERYTHROMYCIN

The first choice after penicillin in the majority of common infections

'ILOTYCIN' is a new orally effective antibiotic which is especially potent against penicillin-resistant staphylococci and other Gram-positive organisms.

Because of its selective action 'ILOTYCIN' causes the minimum disturbance of the intestinal flora.

Therapeutic blood levels are readily achieved, and no toxic effects have been observed.

Indications include:

cellulitis, erysipelas, furunculosis, otitis media, lobar pneumonia, bronchopneumonia, peritonsillar abscesses, sinusitis, laryngitis, tonsillitis, pharyngitis, scarlet fever, wound infections, septic sore throat, upper respiratory infections.

Supplied in tablets of 100 mg. in bottles of 24.
AVERAGE DOSE: 3 tablets four times daily.

Lilly TRADE MARK — *the originator of erythromycin*

Now generally available for prescribing

ELI LILLY AND COMPANY LIMITED · BASINGSTOKE · HANTS

New sublingual/sublabial tablets

SUBLINGS *for the administration of Methyltestosterone or DOCA*

In Sublings the active principles are incorporated in an inert water-soluble, wax base which ensures that the tablets are readily dissolved and the hormone totally absorbed. Their smoothness of texture eliminates oral soreness and their agreeable flavour encourages retention in the mouth.

- **COMPLETE HORMONE ABSORPTION**
- **IDEAL SURFACE AREA**
- **ECONOMICAL**
- **PLEASANT**

Literature on request.

SUBLINGS METHYLTESTOSTERONE

Tablets containing 5, 10 or 25 mg. methyltestosterone; supplied in bottles of 25, 100, 250, 500 and 1,000.

SUBLINGS DEOXYCORTONE ACETATE (DOCA)

Tablets containing 1 mg. deoxycortone acetate; supplied in bottles of 25, 100, 250, 500 and 1,000.

ORGANON LABORATORIES LTD

BRETTENHAM HOUSE, LANCASTER PLACE, W. C. 2

Telephone: TEMple Bar 6785-6-7, 0251-2 Telegrams: Menformon, Rand, London

26

THE LANCET
LONDON: SATURDAY, FEB. 6, 1954

Age and Maternity

IT is well known that the risk of dying as a result of pregnancy becomes greater as the mother nears the end of her childbearing years. MACMAHON and GORDON [1] have sought to define the extent of this risk and to establish what defects and disorders are linked with age in pregnancy.

Any unselected group of older mothers will include some who have previously borne children, and as the age of the group increases so does the average parity. In such parous women repeated stretching of the uterus, laxity of the abdomen, progressively heavier babies, and perhaps fatigue and anæmia may lead to many complications, such as accidental hæmorrhage,[2] uterine inertia, malpresentation, obstructed labour, and antepartum and postpartum hæmorrhage. Furthermore, with increasing parity abortion becomes commoner. About 10% of all first pregnancies end in abortion, but by the sixth pregnancy the proportion has risen to 50% [3]; no doubt interference is a notable factor here. With increasing age there is greater likelihood of hypertension, toxæmia, uterine fibroids, placenta prævia,[4] retained placenta, impaired elasticity of the soft tissues of the birth canal, and need for operative delivery. Toxæmia shows a predilection for the youngest and oldest. In one series the incidence was 42% at the age of 13 years [5]; the incidence is much lower during the main childbearing years but thereafter rises sharply until at ages over 45 the maternal-death rate from this cause alone exceeds that from all other causes between the ages of 15 and 34. In the older mother hydatidiform mole is especially liable to lead to malignant change; and therefore hysterectomy is usually recommended when this abnormality is found in patients over the age of 40. Maternal mortality from all causes increases strikingly after the age of 34. In the U.S.A. between 1945 and 1949 the maternal-mortality rate for mothers of 45 and over was six times that for all ages up to 34; and a similar trend has been noted in this country. The principal causes are toxæmia, antepartum and postpartum hæmorrhage, operative interference, and sepsis.

Length of labour is often said to be uninfluenced by maternal age [6 7]; but in some cases uterine inertia, age, and physique seem to be related. All obstetricians have seen patients of heavy build who conceive late in life, go into labour many days after the expected date, endure a long and tedious first stage full of anxiety for all, and finally require a difficult forceps delivery. Often an insufficient placenta leads to the sudden death of the fœtus, perhaps quite early in labour without previous warning. Accordingly cæsarean section is being undertaken increasingly in the older patient when difficulties arise (in four out of five recent series cited by WEISL [8] the cæsarean-section rate in elderly primiparæ was 16–17%); and thus reported series of cases of inertia may not fully reflect the risk of this complication in older women.

Increasing maternal age also enhances the hazard to the fœtus. For instance, in Scotland in 1950 the stillbirth-rate, which was 21 per 1000 total births for mothers under 20 years of age, was 61 for mothers over the age of 40 [9]; and in England and Wales in 1943, in the case of the "grand multipara" over 40 years of age 11% of the infants were stillborn.[10] The father's age may also possibly influence the risk of stillbirth or neonatal death. Analysis of 400,000 stillbirths has shown that for each of the 5-year maternal age-groups fœtal loss was greater among the children of older fathers [11]; on the other hand, a searching study in New Zealand suggested that any biological effect of the father's age was trivial.[12] The incidence of binovular twins increases with maternal age to a maximum in the 35–39 age-groups; and similarly it increases with parity, at least up to the tenth pregnancy. The birth-ratio—the excess of male over female births—diminishes with advancing maternal age, and the same trend is also evident with increasing paternal age. Mongolism is an outstanding example of the influence of maternal age on the child. A third of all mongols are born of mothers over the age of 40. The incidence per 1000 births in a group of selected London maternity hospitals rose from 1 at all ages up to 34, to 26 at 45 and over.[13] Other neurological disorders—especially those incompatible with life, such as anencephaly, hydrocephaly, and spina bifida—also increase, though less distinctly.

The effects of maternal age on the child in later life are less clear. MACMAHON and GORDON cite deductions from special groups of intellectually able people that intelligence is greater in the first children of older mothers; but intelligence quotients are also reported to be higher in the younger members of a family. At the other end of the scale, mental deficiency has been found four times more commonly than average in the children of mothers over the age of 40. In the U.S.A. an investigation of 1000 psychotics showed that 9·4% were born of mothers over the age of 40, compared with 3·9% for all births. Here paternal age may also be important; for a disproportionate number of criminals and insane have been found among the offspring of fathers aged less than 25 or more than 40. Records compiled by insurance companies show a reduction in the expectation of life with increasing parental age. According to DUBLIN and

1. MacMahon, B., Gordon, J. E. *Amer. J. med. Sci.* 1953, **226**, 326.
2. Calkins, L. A. *J. Amer. med. Ass.* 1949, **141**, 635.
3. Kopp, M. E. Birth Control in Practice. New York, 1934.
4. Penrose, L. S. *J. Obstet. Gynæc. Brit. Emp.* 1939, **46**, 645.
5. Marchetti, A. A., Menaker, J. S. *Amer. J. Obstet. Gynec.* 1950, **59**, 1013.
6. Moore, J. H. *Ibid*, 1949, **57**, 1218.
7. Waters, E. G. *Ibid*, 1950, **59**, 296.
8. Weisl, B.A.G. *Ibid*, 1953, **66**, 1235.
9. Annual Report of the Registrar-General, Scotland, 1950. H.M. Stationery Office, 1953.
10. Munro Kerr, J. M. Operative Obstetrics. London, 1949.
11. Yerushalmy, J. *Hum. Biol.* 1939, **11**, 342.
12. Sutherland, I. Stillbirths, their Epidemiology and Social Significance. London, 1949.
13. Carter, C., MacCarthy, D. *Brit. J. soc. Med.* 1951, **5**, 83.

MARKS,[14] this is due to a generally inferior vitality in the child born to older parents; and they suggest that the factors which bring about the higher maternal and infant mortality may in some cases impair the health of the child who survives. The reduced expectation of life in this group is especially notable, in that economic advantages would have been thought to act favourably on them.[14]

There can be no doubt that the older mother enters pregnancy with many handicaps, and that she should receive expert care, especially in her first or her sixth and subsequent pregnancies. It seems, too, that her child may be constitutionally at a disadvantage. Today, when a satisfactory home and economic stability may not be achieved until relatively late in life, and when efficient contraception makes it easy to postpone pregnancy, we should perhaps encourage patients not to wait too long, bearing in mind "the greatest talisman that a pregnant woman can possess, namely Youth."[15]

Local Antibiotics for Burns

WE publish this week the last of a series of six articles on the management of burns. The articles were prepared by a subcommittee of the British Association of Plastic Surgeons; so their recommendations will be widely studied. But the weight of their authority does not forbid discussion; and Dr. BULL and his colleagues[16] have challenged two points made by Mr. MOWLEM and Mr. DAWSON[17] in their article on the treatment of the recent burn. One point at issue is whether routine application of local antibiotics to burns is good or bad treatment. Relying on the evidence of controlled trials[18] at the Medical Research Council's Burns Research Unit in Birmingham, BULL et al. claim that local applications of penicillin and of polymyxin strikingly reduce infection with *Streptococcus pyogenes* and *Pseudomonas pyocyanea*, thus shortening the healing-time and improving the prospects of skin-grafting. Against the use of local antibiotics, Mr. MOWLEM and Mr. DAWSON cite the risk of inducing generalised sensitivity in the patient and resistance in the infecting organisms. To limit infection, they prefer to rely upon cleaning the burn and keeping it as dry as they can. On the other hand, BULL et al. found that local applications of penicillin produced only a few transient reactions in more than 3000 burned patients treated during a period of nine years; they isolated no strain of *Strep. pyogenes* or *Ps. pyocyanea* resistant to penicillin or polymyxin respectively; they showed that hospital staphylococci found in burns were penicillin-resistant even before treatment; and they emphasise the difficulties both of preventing access of bacteria to a wound dried by exposure and of keeping a wound dry enough to restrain bacterial growth if the wound is covered with tulle gras.

Mr. MOWLEM and Mr. DAWSON will have good evidence to support their views, but they do not give the details in their article and they do not say which antibiotics they tried and discarded or how exactly they used them. So followers of the argument may perhaps feel that they must choose between a clinical impression and the results of a controlled trial—or, of course, put the matter to a controlled test themselves. But there may be good reasons for this difference between the two groups of experts; for one thing it is possible that a fundamental difference in the conditions under which treatment was carried out may explain the contrary opinions about antibiotics locally applied to burns. A significant clue may be contained in Dr. LOWBURY's article, which also appears in this issue: he shows that the practice of dressing burns in a room ventilated with filtered air under positive pressure is itself a valuable way of reducing infection of the burn; and, moreover, patients whose burns are dressed in an air-conditioned room are less likely to acquire nasal infections with resistant staphylococci. The number and variety of organisms in a burn may have a great influence on the effectiveness of antibiotics applied locally. If there are comparatively few organisms, there is less risk that penicillinase-producers among them will interfere with antibiotic activity, and there is altogether a better prospect that such a combination as penicillin and polymyxin will either kill the organisms present or so restrain their multiplication that their presence becomes of little significance. This in turn will reduce the risk of suppuration and necrosis and help to keep the balance in favour of the antibiotic. The Birmingham patients who provided the evidence in favour of antibiotics were treated in the burns unit—that is, under the favourable conditions of the air-conditioned dressing-station described by Dr. LOWBURY—so their burns would have been exposed to fewer organisms. Moreover, in one of the papers[18] cited by Dr. BULL and his colleagues in support of their argument, it is noted that the clinical records of 112 patients whose burns were colonised by *Strep. pyogenes* suggest that, even with penicillin therapy, *Strep. pyogenes* may contribute to graft failure, local inflammation, and transient pyrexia. Nevertheless, the combination of polymyxin and penicillin certainly seems to have a strong case in its favour; for disappointing results with antibiotics may be due to failure to restrain *Ps. pyocyanea*, an important cause of trouble with skin-grafts. Alternatively, if polymyxin and penicillin fail, the air in the dressing-room may be at least partly to blame. The "relatively sterile" eschar to which Mr. MOWLEM and Mr. DAWSON refer may still have too many bacteria in it to give a local antibiotic much chance. In these circumstances a dry wound left alone as far as possible may well do better than one that is periodically disturbed only to receive ineffective applications of antibiotic with a risk of further infection.

There is already much evidence in favour of air-conditioning in all dressing-stations for burns and also in resuscitation-rooms and operating-theatres—and not only those used for the treatment of burns.[19] The discussions on this question, and on others that may be raised by the series of articles from the plastic surgeons, will no doubt include a wider issue: should we not press more energetically for specialised burns units on the lines described by COLEBROOK[20]?

14. Dublin, L. I., Marks, H. H. Proceedings of the Association of Life Insurance Medical Directors of America annual meeting, 1941.
15. Eastman, N. J. *Amer. J. Obstet. Gynec.* 1944, **47**, 445.
16. Bull, J. P., Jackson, D. M., Lowbury, E. J. L., Topley, E. *Lancet*, Jan. 16, 1954, p. 161.
17. Mowlem, R., Dawson, R. L. *Ibid*, Jan. 2, 1954, p. 39.
18. Jackson, D. M., Lowbury, E. J. L., Topley, E. *Ibid*, 1951, ii, 137, 705.
19. See *Lancet*, 1953, ii, 1133; Sevitt, S. *Ibid*, p. 1121.
20. Colebrook, L. A New Approach to the Treatment of Burns and Scalds. London, 1950. See *Lancet*, 1950, ii, 175.

Combined Prophylactics

THE dramatic success of diphtheria immunisation has led to an urgent demand for prevention of other infectious diseases. Prophylactic immunisation is now practised against at least fourteen infectious diseases, and there is hope of protection against more of the virus diseases.

Can we look forward to combining the antigens for each of the infecting organisms in a single prophylactic mixture, administered in one inoculation? The pitfalls in the path to this goal [1] were made clear at a meeting, on Jan. 15, of the Royal Society of Medicine's section of epidemiology and preventive medicine. The immunologists, justifiably proud of the achievement with diphtheria, would prefer to tackle each disease separately, and if possible match the immunisation course to each individual. Naturally, however, the doctor who administers prophylactics, and the official who arranges for this would like to have a preparation that will protect against the greatest possible number of diseases with the least reaction and the least number of injections.

Each disease presents its own problem.

In *diphtheria* it is public apathy, now that there are so few cases. If the incidence is to be kept down, at least 75% of children under 5 years of age must be immunised; yet at present the proportion is only about 50%.

As regards *whooping-cough* the problem is how to encourage immunisation in early infancy; for the most critical period is the first year of life, and the disease is more deadly in the first six months than in the second.

There is a growing feeling that *tetanus* immunisation is desirable for the general population. As a result of such immunisation the incidence of tetanus in Servicemen was remarkably low throughout the late war. In civilian accident cases the patient is given tetanus antitoxin to provide passive immunisation; but the disease may arise from lesions so trivial that antitoxin has not been injected. Injection of antitoxin causes sensitisation to foreign protein, and subsequent administration of serum may give rise to anaphylactic reactions. Furthermore the sensitisation may also result in the rapid disappearance of antitoxin from the circulation. In the U.S.A. tetanus immunisation is being recommended for horse-riders and those employed in stables.[2]

The case for general immunisation against *enteric infections* is less well founded, for usually these are readily controlled by antibiotic therapy.

Smallpox vaccination of infants is well established, but immunisation against *tuberculosis* with B.C.G. vaccine is—anyhow in Britain—still in the experimental stage.

Tropical travellers are no strangers to *yellow-fever* vaccination.

In a combined prophylactic the separate antigens must be not only potent but also compatible with each other. This does not present serious difficulties; but differences in response between one patient and another have also to be taken into account. When a single antigen is administered it is necessary to ensure only that the dosage is sufficient and that the doses are spaced suitably for a good antigenic response. When, however, antigens are mixed, further factors must be weighed. The mixture must be "balanced" so that the effect of one antigen does not swamp the effect of another; and of course the more antigens there are in the mixture, the more difficult it is to secure a proper balance. In a diphtheria-tetanus prophylactic the proportion should be roughly 50Lf: 12Lf; a higher proportion of tetanus toxoid will swamp the response to diphtheria toxoid. A mixture which is perfectly balanced for one patient may be unbalanced for another, since the response to an antigen depends on the previous measures for immunisation. If at some time a person has received a primary stimulus in respect of a particular disease, either by injection of antigen or by subclinical infection, the secondary response to that component of the combined prophylactic will be great and immediate, and other antigens in the mixture may evoke no response at all. Thus the combined prophylactic may magnify the immunity to one disease but give no protection at all against the other diseases; and administration of this mixture will have produced a false sense of security. Similarly in the first few months of life, the infant may not respond readily to active immunisation because of passive immunity by antibodies from the maternal blood-stream.

As regards the constitution of the prophylactics, the present problem is the influence of the mineral adjuvant—generally an aluminium compound. Addition of alum to toxoids enhances their antigenicity—alum-precipitated diphtheria toxoid is an outstanding example. When the toxoid is administered intramuscularly, however, the alum may give rise to aseptic abscesses which sometimes persist for as long as a year. A much more serious objection to aluminium compounds is that they possibly predispose to paralysis in the injected limb if poliomyelitis develops. There is therefore a tendency to revert to fluid prophylactics without alum and to inject the inoculum into the deep subcutaneous tissue rather than into muscle, even though more doses may be necessary when there is no mineral adjuvant.

At present the infant should first be vaccinated against smallpox; then at the ages of 6, 12, and 18 weeks he may be given subcutaneous injections of combined prophylactic containing a balanced mixture of diphtheria toxoid, pertussis vaccine, and perhaps tetanus toxoid (without alum). At the age of 6 months the child's immunity is tested, and at the age of 1 year he receives a booster dose of mixed prophylactic. Such a scheme involves much work by doctors and administrators, and full coöperation by the parents; and it does not always succeed. Of each 1000 injected, it has been found, 15 do not show satisfactory immunity at the end of 12 months.

1. See *Lancet*, 1953, i, 631.
2. *J. Amer. med. Ass.* 1954, **154**, 62.

Toxoplasmosis

DISEASE in man due to *Toxoplasma gondii* was first described in 1939, but the importance of this intracellular protozoan parasite has been recognised only in the past five years. Unlike some of the tropical pathogenic protozoa which it closely resembles, toxoplasma can apparently thrive in all climates; it can infect all, or nearly all, domestic animals and birds; it is catholic in its choice of tissue cells for multiplication; and the infection may manifest itself in many different ways. The rapid increase in knowledge of the parasite's behaviour depends largely on serological evidence, and especially on the cytoplasm-modifying or dye test of SABIN and FELDMAN.[1] We cannot be certain that this test is completely specific, but there is no doubt that infected human beings and animals develop cytoplasm-modifying antibody, often to a

1. Sabin, A. B., Feldman, H. A. *Science*, 1948, **108**, 660.

very high titre. The complement-fixing antibody, which develops rather later and disappears earlier than the dye-test antibody, has also been of great value in diagnosis, and both tests are usually required to confirm the diagnosis of a case in man. In America and Scandinavia surveys of normal people, by means of the dye test and a tuberculin-type skin test, have suggested that subclinical infection increases up to the age of 20, when perhaps a third or even a half of the population give positive tests. If this is correct, then, as SABIN [1] points out, countless millions of people in various parts of the world become infected with toxoplasma during their life-time.

Widespread infection does not necessarily imply widespread disease, and clinical toxoplasmosis remains fairly uncommon. The congenital form, which is the type most usually recognised, can be suspected on clinical grounds, but the diagnosis has to be substantiated in the laboratory.[2] FELDMAN [3] has studied 103 cases of the congenital infection, and he found that 99% had chorioretinitis, 63% cerebral calcification, 56% psychomotor retardation, and about half either hydrocephaly or microcephaly. In another American series mental retardation was present in 80% of the children who were studied for several years. The finding of one or more of these characteristic features is often thought to indicate toxoplasmosis, but they are not confined to this disorder. Moreover in adults infection with the parasite seems to cause neither acute nor recurrent chorioretinitis, and in the rare acquired forms of the disease neither chorioretinitis nor cerebral calcification is present. In proven cases of acquired toxoplasmosis the patient usually has fever, a maculopapular rash, encephalitis, or cough and pneumonitis. SIIM [4] described 8 patients with an illness simulating glandular fever in which the tests for toxoplasmosis were positive, and he has also isolated the parasite from the lymph-glands in this type of case. On an earlier page of this issue Dr. SKIPPER and his colleagues in Sheffield describe the first 2 cases of acquired toxoplasmosis to be reported in this country, and they suggest that this form may be less rare than is usually thought. They failed to find any other positives in 86 patients with similar symptoms; and this confirms FELDMAN'S [3] belief that toxoplasma is only an occasional cause of febrile illness accompanied by lymphadenopathy. Although it is well known that acquired toxoplasmosis may simulate rickettsial or leptospiral infections, few such cases have been brought to light. The Sheffield team are a little diffident about a 3rd case, with a typhus-like illness, since the laboratory tests were not entirely unequivocal. Nevertheless on balance the evidence suggests that this, too, was due to acquired toxoplasmosis.

While we now know a great deal about the distribution of toxoplasma in Nature, no-one has yet discovered how human beings are infected. The parasite has been found in wild hares and rabbits, and cats and dogs living in the homes of human cases sometimes have specific antibodies in their blood; but this does not help very much. ERICHSEN and HARBOE [5] have lately described an acute outbreak of proved toxoplasmosis in the chicken-run; if such an outbreak, or one in household pets, preceded a human case, this would certainly be suggestive. We know that toxoplasma is excreted in the urine and fæces of some animals, but we do not know whether the disease can be spread by respiratory secretions. In man the incidence of inapparent infection still rises at an age when household pets are largely forgotten, and mothers of infected infants often deny any contact with a known animal host of the parasite. The parasites can survive for some days in severe blood-sucking arthropods,[6] but there is still no evidence that any vector is concerned in the natural transmission of toxoplasmosis. So far the mode of infection can be surmised only in the congenital disease, and MACDONALD [7] has suggested that this does not develop unless the mother has the primary infection and primary parasitæmia during pregnancy—which would explain why congenital cases are rare even where subclinical infection is widespread. Whether because the parasitæmia is short-lived or because the maternal neutralising antibody prevents further disasters, it is clear that only one child in a family gets the congenital disease. The mother of an infected child seldom admits to any suspicious illness during pregnancy, although the parasites can sometimes be found in the placenta. Even early diagnosis might, however, not greatly improve the outcome of treatment. There is no specific remedy; but sulphadiazine and related compounds and some of the pyrimidine drugs are useful in experimental infections and should be given in early or acute cases in man.

2. See Valentine, J. C., Lane, W. F., Beattie, C. P., Beverley, J. K. A. *J. clin. Path.* 1953, **6**, 253.
3. Feldman, H. A. *Amer. J. trop. Med. Hyg.* 1953, **2**, 420.
4. Siim, J. A. *Acta path. microbiol. scand.* 1952, **30**, 104.
5. Erichsen, S., Harboe, A. *Ibid*, 1953, **33**, 56.
6. Jacobs, L. *Amer. J. trop. Med. Hyg.* 1953, **2**, 365.
7. Macdonald, A. *Lancet*, 1950, ii, 560.

Annotations

HOSPITAL STATISTICS

Two important annual statistical returns concerning the hospital service have just been published: the Annual Statistical Review [8] and the Hospital Costing Returns.[9] The statistical review provides data on bed complement, bed occupancy, the number of inpatients and outpatients treated, and the number of staff in forty categories employed in each hospital at the end of 1952. The hospitals are divided into some seventeen categories, and separate information is given about special clinics and about the staffs of the regional hospital boards and the hospital management committees. The result is a frightening concentration of figures, minutely printed, covering over 200 foolscap pages. The costing returns, slightly shorter but printed in an even smaller type, present well over 200,000 cash figures or items of expenditure concerning the running charges and salaries under twenty-six headings in each of the hospitals in the country.

Some of the individual headings remain extremely misleading: one hospital may spend 16*s.* 1*d.* per bed per week on laundry and another only 1*d.*, the explanation being that this figure does not include the expenditure on laundry done by the hospital itself. Naturally, other columns concerning running expenses are affected, but this is not mentioned. The costing is finally crystallised

8. Hospital and Specialist Services, England and Wales: Statistics for the Year ended Dec. 31, 1952. H.M. Stationery Office. 1954. Pp. 277. £1.
9. Hospital Costing Returns for the Year ended March 31, 1953. Pp. 151. 12*s.* 6*d.*

and adjusted to give the cost per inpatient per week, based on the total number of beds with deductions for vacant beds and a notional allowance for outpatient work. If the actual cost for outpatient work is known this figure is used, but the report gives no clue when this has been done. This costing figure may provide some basis for accountancy comparison; but it does not reflect the efficiency of the hospital, which could be better shown by calculating the cost per patient treated. The hospital that appears expensive is often the efficient hospital with a rapid turnover and high bed occupancy; and here the cost per patient treated may, in fact, be under half that of a poorly staffed and ill-equipped, but much cheaper, hospital. The figures published may be of some value in calculating costs for road accidents or pay-beds, but the present overemphasis on cost per bed per week constitutes a real injustice to the efficient hospital. It would be of considerable interest to find hospitals in each of the different categories where both the profession and the Ministry agree that the level of staffing and equipment is optimal for really good work, and to use these costs as a basis for comparison.

One of the principal objects of publishing these statistics is to enable hospital authorities to make broad comparisons in terms of performance, staffing, and so on, between hospitals for which they are responsible and similar hospitals elsewhere, and in this way to consider the possibilities of increased efficiency. For any constructive criticism, however, comparison of two hospitals needs a very intimate knowledge of their particular circumstances. The Ministry is now considering how best to present these statistics for 1953 and future years to enable an accurate comparison to be made. The editions published so far have revealed any gross differences in costs, and for these there have usually been adequate explanations. It is very doubtful whether such a detailed breakdown of figures is necessary at all; it would be valuable to have a much simplified analysis with emphasis on figures which demonstrate volume and efficiency of the hospital service, as shown, for example, by the bed-occupancy rate, bed-turnover rate, and cost per patient treated, giving some comparison with previous years. Such an analysis, together with regional summaries, in one volume, could be both informative and digestible.

There is no limit to the statistical analyses which could be made of public services: it might be interesting, but it would not necessarily be useful, to know the number of letters handled per postman in each postal district or the running-costs of every railway station. Although full of fallacies, the figures for hospitals that have hitherto been issued have served a good purpose by focusing attention on the need for better costing systems and improved turnover; but the time has surely come for complete revision of the method of presentation.

THE ANATOMY OF FACIAL PALSY

THE commonest cause of facial weakness in an otherwise healthy adult is Bell's palsy. This eponym was assigned to the disorder well over a century ago; yet the cause is still obscure. Usually the patient feels a vague ache behind the ear, which is accompanied or followed by a facial weakness that often rapidly becomes more severe; previous exposure to draught is common. If, in addition to the facial palsy, there is some loss of taste on one side of the tongue, the diagnosis is further confirmed. This clinical picture portrays only the site of the lesion—namely, between the geniculate ganglion, through which taste-fibres leave the nerve-trunk, and the origin of the chorda tympani, at which they join it. Taste is not always involved, however, and it seems that in Bell's palsy the nerve may be attacked at different levels, at any rate between the geniculate ganglion and the stylomastoid foramen.

Tschiassny [1] suggests that lesions of the facial nerve can be defined by carefully analysing the type of palsy and its accompanying signs. In addition to the well-known supranuclear lesion, with preservation of emotional and paralysis of voluntary movement and relative escape of the forehead, he lists seven levels at which lesions may be recognised. At the nucleus, though all movement is abolished, reflex "tearing" and taste are unaffected, since fibres for these join the nerve in the midbrain and at the geniculate ganglion respectively. Extracerebrally, but above the geniculate ganglion, tearing is lost but taste preserved. At the ganglion taste is also lost. Below this, tearing is again unaffected since fibres for this pass via the ganglion to the greater superficial petrosal nerve. Further down, the nerve to stapedius leaves the facial trunk, and lesions below this level no longer cause hyperacusis to loud sounds. Next, the chorda tympani segregates taste-fibres and lesions after this no longer cause loss of taste. Finally, just at the stylomastoid foramen a motor branch passes to the digastric muscle, and below this level the slight deviation of the chin caused by paralysis of the digastric is absent.

Application of these signs to cases of Bell's palsy tends to confirm that the site of the lesion varies. In practice, however, the tests described by Tschiassny often give equivocal results. The important distinctions are of upper from lower motor-neurone lesions, and of Bell's palsy from other types of lower motor-neurone lesion. Fortunately, both these distinctions can usually be made on the history and clinical findings.

HUMAN BIOCHEMICAL GENETICS

THE pathologist's long-term aim is to describe all disease in terms of the physics and chemistry of the cell. His first successes are likely to come in disorders due to the primary action or inaction of a genetic factor, rather than in the disorders where some external agent, such as infection, is important. Genetic factors must operate first among the chemical elements in the nucleus; and mutations, changes in genetic factors, must produce some variation from the normal in cell biochemistry. Work on lower organisms, such as the fungus neurospora, suggests that in many instances one genetic factor controls the production or functions of one enzyme. In man it is difficult to study what is going on in the cell, and knowledge of biochemical variation is mostly limited to that which can be studied in blood, saliva, and urine. The first biochemical disorder to be recognised was alkaptonuria, because here the abnormal metabolite not only appears in the urine but turns this black on standing. These abnormalities were first fully discussed by Garrod.[2] Harris has now ably summarised present knowledge in a monograph from the Galton Laboratory.[3]

The genetically determined variations in metabolism can be placed in certain broad groups. One group are those in which the end-product differs from the normal, or, if there is no normal, may be present in several alternative forms. Another group are those in which there is an apparent block at some intermediary stage so that normal metabolites accumulate in abnormal amounts.

A good example of the first group are the variants of hæmoglobin. That found in patients with sickle-cell anæmia and, in smaller amounts, in those with the sickle-cell trait differs from normal adult hæmoglobin in its much slighter solubility in the reduced state and also in the electrophoretic properties of some of its derivatives. This physical difference in solubility is chemically important, but it must depend on only small differences in the chemical composition of the molecules. Chemical analysis of these types of hæmoglobin shows

1. Tschiassny, K. *Ann. Otol., &c., St. Louis*, 1953, **62**, 677.
2. Garrod, A. E. *Lancet*, 1908, ii, 1, 73, 142, 214.
3. An Introduction to Human Biochemical Genetics, by H. HARRIS, M.A., M.D. Eugenics Laboratory Memoirs, XXXVII. Cambridge University Press. 1953. Pp. 96. 15*s*.

only differences in the relative proportions of the different amino-acids found, and X-ray analysis of the crystals gives a picture identical in every detail. Different individuals with the sickle-cell trait vary in the proportion of sickle-cell hæmoglobin present. This depends on other genes present, since within families there is less variation in this respect. Two other genetically determined abnormal types of hæmoglobin are known. Another example of genetically determined variation, chemically small but clinically important, is that between the A, B, and O blood-group substances. These substances have been thoroughly analysed, and again the only differences found are in the relative proportions of the different amino-acids present. Yet another example is the congenital methæmoglobinæmia that has been found in four generations of one family where the globin moiety differed from that in normal hæmoglobin. It is noteworthy that the examples in this group, comprising variations in the end-products of metabolism, are mostly due to genetic factors which take appreciable effect in the heterozygous state and in this sense are dominant.

The best examples of the second group come at the moment from the biochemistry of the amino-acid, phenylalanine. Alkaptonuria represents a block at a late stage in the breakdown of phenylalanine. In phenylketonuria, on the other hand, the block appears to be at the first stage of its metabolism—the conversion to tyrosine. Phenylalanine in normal people is an essential constituent of diet, and tyrosine is not; but in phenylketonuria any phenylalanine fed can be recovered from the urine in the same quantity, as phenylalanine or one of its near derivatives, such as phenylpyruvic acid. In addition to these two well-known conditions one case of tyrosinosis has been described in which tyrosine and *p*-hydroxyphenylpyruvic acid were present in the urine in amounts which varied according to the amount of tyrosine or phenylalanine fed; here the block must lie at a stage between that in phenylketonuria and that in alkaptonuria. Fructosuria, pentosuria, and the recessive type of congenital idiopathic methæmoglobinæmia also probably depend on enzyme deficiencies. So presumably do the storage diseases such as glycogen-storage disease, the amaurotic family idiocies, Gaucher's disease, and gargoylism. In this group, comprising blocks in intermediary metabolism probably due to specific enzyme deficiencies, the genetic factors responsible mostly take effect only in the homozygous state, and in this sense are recessive. In some pedigrees, however, alkaptonuria and also Gaucher's disease behave as if due to dominant genetic factors.

Harris includes in his account a third group in which the essential abnormality appears to be failure of renal tubular function. These are errors of metabolism in that the specific dysfunction of the renal tubular cells probably depends on the failure of one or other of the syntheses which normally makes possible the reabsorption of these substances from the glomerular filtrate. The details of these syntheses are not yet known. In this group he places renal glycosuria and also the type of cystinuria in which cystine stones often form and in which greatly increased amounts of the three amino-acids, cystine, lysine, and arginine, are found in the urine, although the plasma levels of these three substances are within normal limits. There is at the moment no obvious reason why these three particular amino-acids should be affected together; presumably their reabsorption involves the same biochemical synthesis. The inheritance both of renal glycosuria and of the cystine-lysine-arginine type of amino-aciduria is not straightforward.

Advances in histochemistry are certain to lead to rapid advances in biochemical genetics. When these come the geneticist will no longer be limited to the study of conditions in which chemical variations can be detected in the blood, saliva, and urine. It is reasonable to suppose, for example, that in achondroplasia, due in most instances to a dominant factor, and in Morquio's disease, due in most instances to a recessive factor, specific biochemical abnormalities will be found in the osteoblasts and osteoclasts. In the same way specific abnormalities in the nerve-cells will be found, for example, in Huntington's chorea, which is dominantly inherited, and in Kinnier-Wilson's disease, which is recessively inherited.[4] In Kinnier-Wilson's disease there is in fact already some evidence that there is abnormal deposition of copper in the brain and liver and an abnormally low level of protein-bound copper in the plasma. Bearn [4] suggests that the sequence is a low level of copper in the plasma, increased absorption of copper from the gut, deposition of copper in the tissues with damage to the basal nuclei of the brain and to the liver, and increased excretion of copper in the urine bound to amino-acids. No doubt the time will come when individual differences in resistance to infection—for example, to the tubercle bacillus—can be described in terms of individual variations in biochemistry, but that is looking some way ahead.

"SMOKER'S COUGH"

TOBACCO-SMOKING is a hazardous pastime. While contributing to the yearly £617 million tobacco tax, the smoker may, it seems, raise his blood-pressure, diminish his vital capacity, have anginal pain, and lay the foundations of a bronchial carcinoma. He may also suffer from "smoker's cough," chronic pharyngitis, wheezing, shortness of breath, and a tendency to respiratory infections—a combination that has been termed "smoker's respiratory syndrome." Waldbott [5] has found the pharyngeal and bronchial mucosa in this condition fiery red and streaked with mucopus; the patients had wheezing, a productive cough in the mornings, "rhythmic darting and angina-like" chest pains, and a sensation of constriction beneath the sternum. When they stopped smoking two-thirds of them improved, and most became completely well. Some who did not improve had advanced emphysema, and Waldbott assumes that this was the end-result of chronic irritation by nicotine, pyridine, collidine, ammonia, and hydrocyanic acid.

"Smoker's cough" is not new. A German who visited London in 1598 noted that the English were constantly seen smoking the "nicotean weed" and puffing out the smoke along with "plenty of phlegm and defluction from the head." Nor are smokers unaccustomed to having their indulgence attacked, though seldom so vehemently as in King James's "Counterblaste to Tobacco." Smoking was very widespread at that time. According to a declaration introducing the tax of 6*s*. 8*d*. a pound in 1604, it was "through evil custom and the toleration thereof, excessively taken by a number of riotous and disorderly persons . . . who do spend most of their time in that idle vanity . . . and also do consume [their] wages . . . not caring at what price they buy the drug." It has been suggested that the very excess of smoking by all classes in the 17th century may have led to the growth of the snuff habit, which gradually replaced smoking in the 18th. Snuffing itself also developed to fashionable excess, but yielded to cigarette-smoking in early Victorian times. The immoderate cigarette-smoking of the 20th century may some day become unfashionable and snuff-taking return—but perhaps not on the lavish scale of the past, when Samuel Johnson carried his snuff loose in his waistcoat pockets, Coleridge suggested that snuff might be the final cause of the human nose, and a certain Mrs. Thompson requested that at her funeral her faithful servant should walk before the coffin and distribute every twenty yards a

4. Bearn, A. G. *Amer. J. Med.* 1953, **15**, 442.
5. Waldbott, G. L. *Ann. intern. Med.* 1953, **39**, 1026.

large handful of Scotch snuff to the watching crowd. The sale of snuff is already said to be slowly increasing; and in another half-century heads may be gravely shaken over "snuffer's respiratory syndrome."

UMBILICAL HERNIA IN INFANTS

UMBILICAL hernia is extremely common in the infant. Fortunately, as Dr. Grace Woods [1] points out, the disorder tends to resolve itself spontaneously. One of the best conservative measures is to keep the hernia reduced, in order to prevent stretching of the ring by continual protrusion of abdominal contents; for if the ring is not stretched it may contract. The simplest and safest method is to apply strapping. This must be inextensible and must be taken right round the child and overlapped at the back, tightly enough to control the hernia; it should be left in place for two to three weeks at a time, so the child must be bathed with the strapping in place. If the child is sensitive to the plaster, the strapping is applied sticky side out, and this is powdered after it has been fixed in place. A small pad is placed over the hernia, but under the strapping, to make sure that reduction is complete. Dr. Woods points out that pertussis will cause the apparently cured hernia to reappear; and many pædiatricians consider it important to keep the child's abdomen strapped if bronchitis or whooping-cough develops soon after the spontaneous cure of an umbilical hernia.

Dr. Woods states that 93% of children with umbilical herniæ recover spontaneously in the first year of life. For the remaining 7% it would seem that effective strapping should first be tried, and if this fails operative repair should be undertaken.

WATER INTOXICATION IN CLOSED-CIRCUIT ANÆSTHESIA

CONSERVATION of heat and water-vapour has been regarded as one of the main advantages of closed-circuit anæsthesia for long operations. On more careful analysis, however, it seems that with this method heat loss may sometimes be inadequate.[2]

In man body-temperature is regulated by a delicate balance between heat production and heat loss which is controlled by nervous reflexes from the brain and spinal cord. Under anæsthesia this delicate nervous control is disturbed, and as a result the temperature commonly rises by 1°–2°C.[3] Radiation, conduction, convection, and the evaporation of water from the skin and lungs continue under anæsthesia as well as circumstances allow; but heavy drapes and mackintosh covers effectively prevent the evaporation of sweat. With closed-circuit anæsthesia the inspired gases are quickly saturated with water-vapour, so further evaporation by this route is impossible. At the same time these gases are in contact with soda-lime, which adds both heat and water-vapour while neutralising carbon dioxide. Heavy atropinisation, and also ganglion paralysants, such as pentamethonium and hexamethonium, much reduce secretion of sweat; but with the methonium drugs increased circulation in the skin increases heat loss by radiation, conduction, and convection. Thus, some water retention and over-heating are common, especially where the environmental temperature and humidity are high. This may lead in extreme cases to convulsions, coma, fever with profuse sweating, and other signs of water intoxication. It is difficult, however, to believe that the body at rest under basal metabolic conditions will suffer serious water retention unless intravenous fluids are being administered in large amounts or environmental factors are extremely adverse.

Closed-circuit anæsthesia is a small but important facet of this complicated picture of heat production and loss. Its influence can be assessed only by a close watch on body-temperature; this can be roughly assessed from the skin-temperature, but the body-temperature itself can be measured without great difficulty during surgical operations. The environmental temperature and humidity should also be known. With body-temperature changes of ± 1·5°C there is little danger,[3] but from recent work on hypothermia [4–6] it would seem prudent to err on the side of cooling rather than over-heating under anæsthesia.

No practical solution to the problem of over-heating with water retention in closed-circuit anæsthesia is likely to be found in devices for absorbing water by chemicals or for cooling anæsthetic machines; such complicated additions to already complicated machines may be more dangerous than useful. Where heat loss is likely to be inadequate the following measures are advisable: (1) watch and record body-temperature; (2) encourage heat loss by increased evaporation of water from the skin, and by other physical means where necessary; and (3) replace closed-circuit anæsthesia by the semi-closed circle absorber with a total gas flow of about 3 litres per minute. This will reduce both the water-vapour content and the temperature of the inspired gases. An even greater heat loss is obtainable with the continuous-flow rebreathing attachment.

THE LIFE OF BARCROFT

THE biography of Sir Joseph Barcroft, F.R.S.,[7] is full of interest not only to the physiologist but also for the general reader. He was one of a number who at the turn of the century made famous the British school of physiology, and it is particularly impressive to see how his whole scientific career evolved from his early experiments on the salivary gland. A single thread connects these with his classical studies of the oxygen dissociation curves of blood and the properties of hæmoglobin (in connection with which his name will always be remembered) and his final observations on the physiology of the fœtus. This integration of his life's work reveals an intellectual breadth by which he saw patterns where others saw only isolated items in a general confusion. He had in outstanding degree the power, so highly prized by researchers, of seeing the implications of his discoveries, so that he could plan further experiments imaginatively to give the most fruitful results. Sound design was one of the characteristics of his experimental work. The same powerful simplicity marks his copious writings; no scientific writer has displayed his discoveries more attractively and more clearly. Professor Franklin's book also shows how well suited to the full development of his gifts was his family life, which provided a stable and relatively care-free environment largely derived from the intellectual restraint and charity of his Quaker parents. The preliminary sketch of the history of the Barcrofts is particularly interesting in this respect. The many readers who have affectionate recollections of Sir Joseph will continually be delighted by details which appear in this biography and by no means disappointed in the portrait of the man they knew. Those who did not know him personally will come to see why he was held in such high esteem by those in contact with him. The dust-cover bears a lively picture of Sir Joseph in characteristic attitude, chalk in hand, in the middle of a lecture to students; and the contents fulfil its promise.

1. Woods, G. E. *Arch. Dis. Childh.* 1953, **28**, 450.
2. Cole, F. *J. Amer. med. Ass.* 1953, **151**, 910.
3. Harris, T. A. B. The Mode of Action of Anæsthetics. Edinburgh, 1951.
4. Dundee, J. W., Gray, T. C., Mesham, P. R., Scott, W. E. B. *Brit. med. J.* 1953, ii, 1237.
5. Dundee, J. W., Scott, W. E. B., Mesham, P. R. *Ibid*, p. 1244.
6. Smith, A., Fairer, J. G. *Ibid*, p. 1247.
7. Joseph Barcroft, 1872–1947. By KENNETH J. FRANKLIN, of the Medical College of St. Bartholomew's Hospital. Oxford: Blackwell Scientific Publications. Pp. 379. 37*s.* 6*d.*

Special Articles

THE AGED SICK

Admission to Hospital or Care at Home ?

W. L. GRAHAM

SECRETARY, GERIATRIC SERVICE, SOUTH EAST METROPOLITAN HOSPITAL REGION

SINCE August, 1951, King Edward's Hospital Fund for London has financed a service in the South East Metropolitan hospital region which investigates the social circumstances of elderly patients for whom application for admission to hospital has been made. Where possible the service offers the patient alternative forms of help which will enable him to remain out of hospital either temporarily or permanently.

Hospital groups send particulars of the patients they wish visited. A social visitor then calls at the patient's house and reports the situation she finds there. If admission appears to be unavoidable, she says how urgent she considers the need. Where the hospital doctor thinks that admission is not required on clinical grounds, the service will help the patient in other ways —perhaps by applying to the local authority for admission to residential accommodation or for a home help, or by applying to a voluntary organisation for meals or medical loans, or by suggesting a suitable private nursing-home or rest home. Investigations and visits are now made regularly in ten hospital groups.

After reports have been submitted to the hospitals many patients pass out of the hands of the service, and we thought it of interest to review the later histories of the 1315 patients visited up to Dec. 31, 1952. The review was made between January and the end of March, 1953.

What Happens to the Patients

The following summary shows the action taken after each patient had been visited at home :

1. *Removed from waiting-lists*		
(*a*) Dead or already admitted before visited		240
(*b*) Withdrawn on the service's recommendation (patients had recovered or refused admission)	320	
(*c*) Other arrangements made by the service making admission no longer necessary	31	
(*d*) Admission arranged to local-authority homes	76	
(*e*) Kept at home under observation	23	
		450
2. *Admitted*		
(*a*) Classified as urgent on social grounds	195	
(*b*) Classified as less urgent on social grounds	181	
(*c*) Admitted after being assisted temporarily at home	89	
		465
3. *Died while awaiting admission*		124
4. *Still awaiting admission*		
(*a*) Urgent	2	
(*b*) Less urgent	26	
		28
5. *Cases not yet determined*		8
		1315

Of 1315 patients it was thus necessary to provide hospital accommodation for only 617, of whom 465 actually occupied beds, while 28 were still waiting when the inquiry closed. As a result of the service's visits 450 patients (34%) were removed from hospital waiting-lists. This is similar to the reduction achieved by Kropach [1] in Paddington.

WAITING PERIOD

Urgent Cases

195 patients recommended for urgent admission on social grounds were admitted after an average wait of twenty-three days from the date of the first visit. Actually over half this number (102) were admitted within a week and a further 28 within a fortnight; 32 others waited up to six weeks and the remaining 33 up to twenty weeks. 2 patients waited more than twenty-eight weeks. 2 patients were still waiting when the inquiry closed, 1 for thirteen weeks and the other for twenty-one weeks.

The first visits are made to inquire into the social circumstances with a view to helping those not needing hospital treatment. Recommendations as to the urgency of admission are based on these social circumstances. It follows, therefore, that when the hospital medical officer couples the report with the medical history some alteration in the degree of urgency may be made.

Less Urgent Cases

The average waiting-time for the 181 patients recommended for admission less urgently was forty days, but 38 were admitted within a week and a further 28 within a fortnight; 56 more waited up to six weeks, leaving 59 who were admitted after periods extending to twenty-five weeks. Two patients waited over twenty-eight weeks.

The average waiting-times varied considerably between hospital groups. The figures only include patients visited by the service: many others are transferred from acute wards or accepted immediately by the hospital and there may be many reasons for the long wait in some areas. It is possible, however, to give some explanation here. The average waiting-time for an urgent case in one group, for example, is two days. But this group has 268 beds or 1·5 per 1000 population. It has enough beds to allow for a large turnover and, since the appointment of a geriatric medical officer, has increased its admissions from 111 in 1951 to over 500 in 1952. On the other hand, the average waiting-time in another group where there is no geriatrician is sixty-nine days. Here there are only 70 beds or 0·30 per 1000 population and admissions depend on deaths rather than discharges.

LENGTH OF STAY

The following figures show the length of stay of the 465 patients who were admitted to hospital:

Stay in days	*Discharged*	*Died*	*Still in hospital*
1–28	43	94	3
29–56	50	23	10
57–84	31	21	2
85–112	15	12	9
113–140	5	13	4
141–168	3	7	8
169–196	3	6	13
197–224	2	4	6
225–252	1	2	3
253–280	1	3	8
281–308	–	2	5
309–336	2	1	6
337–364	–	1	10
365–392	1	–	9
393–420	–	2	4
421–448	–	–	3
449–476	–	1	3
477–504	–	–	3
505–532	–	–	4
533–560	–	–	2
561–588	–	1	–
	157	193	115

It will be seen that deaths and discharges are likely within about six months of admission. Greenwood [2] gained this impression from a survey of patients admitted to Withington Hospital.

The average stay was 113·2 days. The discharge-rate was 33·8% of those admitted and the death-rate 41·5%.

Home Circumstances

Many applications for admission to hospital are made because the home circumstances do not allow satisfactory care to be given to the patients. Local-authority domiciliary services and other help from voluntary sources enable many patients to remain at home, but for many more a hospital bed must be found. The following notes describe the general circumstances under which patients were living :

44% of the patients lived with daughters and sons-in-law or other members of the family who were in a position to give

1. Kropach, K. *Lancet*, 1951, ii, 928.

2. Greenwood, J. M. *Ibid*, 1952, i, 303.

full-time attention, though domestic and other duties may have made nursing day and night difficult.

16% lived with aged husbands or wives or other old or frail relatives incapable of giving adequate care or with relatives out at work all day.

21% lived entirely alone and some depended on what attention could be given them by neighbours or by relatives living elsewhere. Nearly all these patients were alone at night.

9% lived in lodgings and received indifferent attention from their landladies.

10% were in nursing-homes or residential homes where either the fees could no longer be met or the home was not equipped for bed cases.

Diagnoses

The following diagnoses were given by the patients' doctors at the time of application :

	%
Senility	28
Stroke	16
Cardiac disease	14
Rheumatism and arthritis	10
Bronchitis and asthma	7
Arteriosclerosis	6
Parkinson's disease	3
Hypertension	3
Disseminated sclerosis	2
Others	11

Discussion

Of the patients admitted to hospital only 90 (19·3%) had remained longer than six months when the inquiry closed. Amulree, Arnold, and Polak,[3] in their survey of admissions to University College Hospital's unit for the care of the aged sick, exclude such patients when calculating the average stay as they regard them as long-stay cases. The average stay of the remainder was 40·2 days. If, in the present review, a similar exclusion is made the over-all average stay drops from 113·2 days to 58·6 days.

The average stay of the 90 patients, however, was 340·8 days, and it seems that 1 long-stay case may well prevent the admission of at least 6 patients who could be treated and discharged within the same length of time. On this basis, if a hospital admits 500 patients in twelve months it may find that 19% become long-stay. This might seriously retard the admission of 570 short-stay patients and increase the waiting period and the length of the waiting-list. Moreover, delay in the admission of a rehabilitable case may ultimately result in a longer stay in hospital.

A long stay in hospital is often necessary for social rather than medical reasons. Whatever the reasons may be, there are certainly many patients who need no more than some nursing supervision. Several hospitals estimate that this group occupy a quarter of the total geriatric beds. Usually they are not up to the physical standard required by residential homes and so they remain in hospital beds. It is urgent that these men and women should receive help and attention in some extra-hospital accommodation. Skilled medical and nursing care would then be more readily available for the patients most needing them.

3. Amulree, Lord, Arnold, P., Polak, A. *Ibid*, 1952, ii, 191.

ARTS OF ADMINISTRATION

The King's Fund Staff College for Matrons

To become the matron of a hospital is a formidable undertaking. Small wonder that those who accept the charge run some risk of becoming formidable themselves. It has never been decided whether this is an essential qualification for the job—or indeed what qualifications of any kind must be regarded as essential. King Edward's Hospital Fund for London, however, who have just opened a new residential staff college for prospective matrons and assistant matrons, take it for granted that they must, at all events, be people of good judgment, with a liberal outlook, and a fair knowledge of the way things are done outside hospital.

THE COLLEGE

The college is housed in a large Edwardian mansion in Holland Park, with rooms that make fun of our present ideas of living space : a dozen or sixteen people in residence here need never jostle elbows.

The great rooms upstairs have been cleverly divided to make single bedrooms overlooking gardens or the quiet tree-lined road, simply furnished, and each fitted with its own basin and hot-water supply. Downstairs the hall provides a comfortable gathering-place round the fire ; and a large light library (with, as yet, only a skeleton supply of books) is used for lectures, discussions, and personal study. The deliberate aim has been to avoid luxury, but set against white walls, the dining-room panelling, the moulding of a fireplace, or the carved oak of the staircase, the good plain furniture looks inviting ; and the intelligent use of colour gives warmth. The students will not find it difficult to become attached to their college.

THE SYLLABUS

The first course, now in progress, is naturally experimental. Like the courses at the King's Fund Staff College for Ward Sisters,[1] it combines both theory and practice : terms spent in informal lectures, discussions, and written work are interspersed with periods at work in the field. The main object is to develop the student's administrative ability by helping her to gain a fuller understanding of human beings at work. The whole course lasts ten months. Three terms, of six weeks each, are spent in residence at the college.

The first term, devoted to a study of the proper tasks of the matron, was opened by Sir Wilson Jameson, with a course of lectures on the development of the hospital system since 1820. Other lectures are covering the structure of the health service, the place of nursing in it, and the relations of the nurse with other members of the hospital team. The scope of the matron's responsibility for the nursing of patients and her educational responsibility toward the nurse are defined, and the conflict between these two duties is used to illustrate the need for a fresh approach to nursing education.

Since the matron has to discharge her responsibilities through other people, much weight is given, throughout the course, to the problems of getting a team to work together—which is nowadays called personnel management.

Thus in a series of lectures on the lay administrator's viewpoint students are encouraged to consider how to praise good work, how to find fault with bad work, how to deal with awkward situations, how to time a request to a committee, how to deal with complaints, how to state a case, how to keep touch with other people's views and ideas, and how to press on with a good cause after a refusal—or several refusals. The subject comes up again in a series of lectures on industry's contribution to human problems in management. These have been given by Miss B. N. Fecar, and deal among other things with the management of special groups of workers, such as married women, part-time workers, the aged, and the disabled ; with the training of young workers and of supervising staff ; and with the value of consultation in getting coöperation. The trade-union movement is described and explained, so that some who have perhaps thought of trade-unionism with impatience and dislike are able to understand the strong necessity from which the movement was born, and the solid worth of its achievements.

Lectures are in every case followed by discussion, and of course there is much informal discussion round the fire at night, and at the weekly guest-night when some interesting person comes and gives a short account of his own subject. Papers written by the students on various subjects within their own experience also come up for discussion : and sessions on psychology, conducted by Prof. D. W. Harding at Bedford College, have been based on the discussion of such papers.

1. *Lancet*, 1949, i, 1060.

There have also been sessions on communication—the taking of evidence, the writing of reports, correspondence, interviewing, and ways of putting policy across to staff—the aim in every case being to get the student to consider what effect she is having on other people. She is also given guidance in evaluating testimony.

The first period of field work, lasting six weeks, will follow the first term in college.

It has been spent in firms, hotels, or other organisations where the personnel work is known to be good. Each student has taken on a definite job for the period, working with a junior administrator or in the personnel department. At the end of the period the students gathered again in college and reported and discussed their experience in the various organisations, before beginning their second term of theory. This will be largely a continuation of the work begun in the first term, with an additional series of lectures on hospital methods and practice and on community relations and voluntary organisations.

The second period of field work, lasting twelve weeks, is to be spent in hospitals, carefully selected so as to supplement the previous experience of each student. She will spend more than half the time in the hospital administrator's department, learning how the various branches of the hospital's work are coördinated. This should do much to allay the distrust, so commonly present in hospitals, between the professionals and the administrators—between those who look after the patients and those who manage the business and domestic side. The rest of the student's time, in this period, will be probably passed in the matron's office.

The third term in college is to provide a detailed study of the work of the matron's office. Methods used in different hospitals and outside hospital will be compared, and the opportunities of the matron as head of the training-school will be discussed. Students will be given further practice in report writing, and will get some insight into the importance of hospital statistics. They will learn to compile simple statistics themselves, and to make graphs, and they will be introduced to vital statistics.

The last period of field work, lasting 4 weeks, is conceived as an individual assignment from which the student can supplement her experience in ways she chooses for herself. Some may be offered a small travel grant to study a subject important in their future work, others may choose to get teaching experience; one may be given the opportunity to do a small piece of research and make a report, and another may take a four-week course at the King's Fund Administrative Staff College.

THE STUDENTS

This is a liberal course, giving any student with a lively mind a glimpse of new aspects of her calling, and extending her concept of the matron's responsibility and influence. The students, who are seconded on paid study-leave, have all been selected by their hospitals as suitable for nursing administration. They will return to their hospitals to take up administrative posts, possibly as assistant matrons with the prospect of becoming matrons in a few years' time. There were 40 applicants for this first course, from whom were selected 11 who seemed the most promising. There would be an almost equally good case, of course, for selecting the 11 who seemed the least promising. The college, however, has followed the lead of Miss Nightingale who taught her carefully chosen pioneers that it was their business to spread the light.

The college has a second project in view—to arrange refresher courses, lasting a month, for matrons already in action. This bold step will be watched with appreciation by those standing on the side-lines.

Management of Burns

A series of six articles prepared by a subcommittee of the British Association of Plastic Surgeons *

VI. RESTORATION OF FULL FUNCTION

HOWEVER satisfactory the early restoration of the skin surface may have been, there are always some patients who, at the end of this phase of treatment, still have a defect in function or are seriously handicapped by their appearance. This failure of primary treatment to restore the patient completely to normal may well occur in any of the main groups into which burns may be subdivided.

DISABILITIES AFTER PRIMARY TREATMENT

Superficial burns, especially if they are extensive, may heal leaving skin of reasonable appearance but of very poor elasticity. Should the face be involved, the result may be ectropion of the lower lids, which will become obvious only when the mouth is opened or the neck extended. On the extensor surface of the hands, a similar condition may lead to persistent cracking over the metacarpophalangeal and interphalangeal joints. This cracking causes the deposition of more fibrous tissue and thus aggravates the initial condition. Immediate surgical treatment is not usually necessary, for in time there is often some improvement; but if at the end of, say, nine to twelve months the condition remains obvious, then surgery should be considered.

When the *dermis has been exposed*, it is probable that there will also be areas in which the dermis itself has been lost so that the subdermal tissues are exposed and damaged. Such a burn usually heals spontaneously, but complete epithelialisation is seldom achieved in a reasonable time and the resultant scar may be unsatisfactory because of contracture, excessive thickness, or complete lack of elasticity. Its surface is often a poor colour and is usually irregular. These disabilities may improve in time, but they will seldom be overcome sufficiently to allow full function. From every point of view, it is preferable to accept this fact early rather than to while away the time with massage or some other palliative and purely expectant treatment. Once the disability is judged as likely to be permanent, and this decision can usually be made within six weeks of healing, then early and complete replacement of the whole area will provide the necessary potential freedom of movement to enable underlying joints, muscles, and tendons to escape the secondary and almost irreversible changes which prolonged restriction will ultimately impose upon them.

When the *full thickness* of the skin has been lost and skin-grafting has been carried out, it is true that early epithelial continuity is achieved, but it is by no means certain that complete restoration of function will follow. The split-skin graft is the type of graft most commonly used: it has many characteristics which are an immense advantage in its early application, but when it is established its colour and texture are poor and it is almost completely inelastic. Furthermore, it tends to shrink considerably, although this depends to some extent on its position; on extensor surfaces, contracture is not very great, but on flexor surfaces it is often excessive. This characteristic is often aggravated by the fact that split-skin grafts must often be applied either immediately after the excision of a slough or on to granulating areas; in either case there is a base of potential scar-tissue beneath the graft, to which is added the new vascular buds and their supporting fibroblasts, which ultimately become the cement between the skin and its bed. These tissues always tend to contract and it is therefore not uncommon to see a graft presenting a wrinkled epithelial surface on a deep contracted base. Such contracture will often mean poor function and demand further surgery for its alleviation.

* The members of the subcommittee are: Mr. R. J. V. BATTLE, Mr. PATRICK CLARKSON, Mr. RAINSFORD MOWLEM, Mr. ROWLAND OSBORNE, and Mr. A. B. WALLACE. They are glad to acknowledge assistance from Mr. A. D. R. BATCHELOR and Mr. R. L. G. DAWSON.

In addition to these difficulties, there is another for which no solution has yet been found: the tendency for healing wounds, particularly burns, and more especially burns due to chemicals, to produce *hypertrophic scars*. The condition is most often seen in children and in young adults, and unfortunately a high proportion of burned patients are in these age-groups. In older people the incidence and the intensity of the hypertrophy tends to decrease. Hypertrophy may be so severe and so persistent that complete correction of the contracture is almost an impossibility. Each successive graft shrinks to a minute proportion of its original size and becomes raised upon a layer of scar-tissue which may be as much as $1^1/_2$ cm. thick. It is surrounded by a collar of hypertrophic, red, and irritable scar-tissue with a thin epithelial covering. Excision and replacement may be followed by the same sequence of events. The phase of hypertrophy lasts for months or even years, but it finally fades into a stage of resorption, at the end of which the white, shiny, and inelastic skin is very fragile but at least has the merit of being thin again. Unfortunately delay until this normal cycle has been completed can mean permanent disability in joints or even the failure of bony or soft tissue development.

Finally, there is the extensive burn which has caused *deep destruction of skin* and subcutaneous tissue, or actual loss of an organ. Joints or tendons may have been exposed and only temporarily protected by early epithelialisation; or a nose or an ear may have been lost. Their reconstruction may well present problems as urgent and as difficult as those of early treatment.

METHODS OF TREATMENT

These problems of disability, whether they be related to limitation of movement, to loss of organs, or only to cosmetic difficulties, are primarily the responsibility of the plastic surgeon, in contradistinction to the early treatment of the burn, which must be the duty of all surgeons. It is not the aim of this article to do more than to point out that these disabilities can be minimised and to give an outline of the methods by which such improvements can be obtained.

Hypertrophic Scars

A hypertrophic scar normally passes through the following stages:

At first it is relatively normal in appearance, but within a few weeks it becomes raised and red, and looks rather moist. In this phase, its normal regression may be hastened by superficial X-ray therapy, but this must be used with discretion for secondary radiation changes can easily be precipitated which later may lead to disastrous results. As the vascular phase passes, the scar is less red and less prominent, but it often remains very irritable especially when the patient is warm. The scratching, which is almost inevitable with children, produces further minor abrasions, tending to add to the scar-tissue already present. Control of this irritation by X-rays is not usually advisable, unless no further operation is contemplated; and calamine lotion seems to be at once the most simple and possibly the most effective method of treatment. In its final phase, the scar is white, smooth, and shiny. It is inelastic, but it is probably adequate as a skin cover, except in those areas where it has caused contracture.

The presence of such a scar may determine when and what kind of surgical repair shall be undertaken. But, when complete excision can be carried out, with or without replacement by grafting, it is often better done with the aid of irradiation before and after the operation, in an endeavour to minimise the tendency of the skin to hypertrophic reaction of this type.

Face

Many burns involve the face to some extent. It is obvious that the replacement of scars on the face will be designed to restore both appearance and function. The type of graft usually chosen, therefore, is a full-thickness one; the graft should be taken from areas with skin of suitable texture, and it should preferably be applied in such a way as to produce a symmetrical effect. Application to the cheeks and round the mouth may be difficult, and the coöperation of the dental surgeon may be a great help; but since these grafts are needed for mainly cosmetic reasons, they should never be contemplated except under circumstances best calculated to produce a perfect result.

The main exception to the use of a whole-thickness graft on the face is in the upper lid, which is normally repaired by a split-skin graft because of the amount of mobility required in the finally reconstructed lid. These free-graft replacements, however, are not invariably applicable on the face and certainly not on the neck, where they are particularly prone to shrink and it is often impracticable to continue with their use. The alternative will be a tubed pedicle or a flap of skin, with its associated subcutaneous tissue, from the chest or the abdomen. Another indication for the use of tubes or flaps occurs when the burn has destroyed deep tissues or whole organs, such as an ear or the nose.

Trunk

Here the question of appearance seldom arises, but contractures are common in the shoulder and groin areas. These can well be treated by the simplest method—namely, the insertion of additional split-skin grafts.

Chest

An extensive cuirass of scar or even of split-skin grafts may distort the normal breast development in young girls, and it is necessary, therefore, to keep a little girl with such a burn under periodic supervision until full development is reached, so that additional skin may be applied, if necessary, to eliminate tension or pressure.

Legs and Feet

Here again, appearance is not, as a rule, a matter of the first importance, and for that reason the simplest type of graft, the split-skin graft, is usually sufficient. If, however, these grafts are applied below the knee, pressure support should be maintained for at least three to six months to avoid the gravitational œdema and the venous stasis which so easily produce secondary ulceration and loss of the graft. This support must be the patient's own responsibility, and he must be warned about the risks to avoid and shown how to apply the supporting bandages. The bandages should be retained until there are no colour changes in the graft or the scars when the leg is allowed to hang down for a short period without the bandages.

Serious burns on the feet are usually caused by molten metal. If there has been full-thickness loss on the sole of the foot, it may be possible to produce a stable result by using a thick free graft, but the choice of this type of repair should be made with care. The alternative will be a flap of full-thickness skin and fat taken from the back of the opposite calf. Such flaps, however, are not free from all postoperative risk. There is no skin elsewhere in the body comparable to the rigid skin of the sole, and any replacement by soft and more pliable skin, with coarsely lobulated subcutaneous fat underneath it, will lead to minor troubles, especially at the junction between the flaps and the normal skin of the sole. For many months these flaps are insensitive and therefore readily damaged by such minor traumata as may be produced by a fold in a sock. This kind of repair, therefore, will inevitably mean that the patient must be prepared

to give the foot a considerable amount of attention for the rest of his life.

Arms and Hands

Contractures in the elbow area are often well treated by free grafts, but in localised burns a better functional and cosmetic result will be obtained by using a flap of skin and subcutaneous tissue derived from the abdominal wall or the chest. These flaps are essential when dealing with a deep burn at the wrist which has exposed tendons or joints. The initial epithelialisation by a split graft may well have prevented further loss of function, but no final reconstruction can be carried out through such a graft; so it should be replaced by thicker integument as the first stage of the functional repair.

In the hands care must be taken to distinguish the loss of power and movement so often seen after an extensive burn of the dorsum from the irremediable damage caused by muscle burning. In most cases, a dorsal burn will heal and leave a thick scar which is contracted in both the transverse and the axial planes; and this scar will limit wrist and finger movement and will either flatten or reverse the normal concavity of the metacarpal heads in the palm. In spite of this, there may have been no initial damage to the extensor tendons or to the joints, though the metacarpo-phalangeal joints will very readily become involved in later periarticular fibrosis. It is a waste of time to spend months in massage or remedial exercises whilst this skin cover is so inadequate. Early complete dissection and grafting will restore function in a matter of weeks. If appearance is important, whole-thickness grafts may be used, but full function will be obtained by a partial-thickness graft, provided the burn is confined to the dorsum of the hand. Lesser degrees of burning of the dorsum may well lead to web contractures between the fingers, which will limit the individual movement of fingers or thumb. In these cases rearrangement of the scar-tissue between the fingers themselves may be all that is necessary to correct the restriction in movement.

Dorsal burns of the fingers not infrequently expose the proximal interphalangeal joints and destroy the middle slip of the extensor mechanism. The finger then adopts the position of hyperextension at the metacarpo-phalangeal joint, with flexion at the proximal interphalangeal joint and extension of the distal interphalangeal joint. If the primarily affected proximal joint can be put through a full range of passive movement, reconstruction of the extensor mechanism is often possible. But this fortunate state of affairs is unusual, and the alternative is an arthrodesis of this joint in 30° of flexion to provide a working finger. In either case, the replacement of the scarred dorsum may be an essential preliminary.

Burns on the palm are comparatively rare, except in small children who fall on to exposed electric radiators. The best primary treatment is obviously immediate excision and grafting; and if this has been done it is probable that no further treatment will be necessary. If it has been neglected, spontaneous healing or even healing after the application of split-skin grafts, is likely to end in a gross flexion deformity. The longer the deformity is allowed to persist the more likely is the establishment of secondary changes in the joint capsules and tendon sheaths. The best treatment, therefore, is complete dissection of the whole of the affected area, followed by the immediate application of a full-thickness graft. In most instances, there is little justification for the use of flaps on the palm of the hand. They are bulky and can never be trimmed to anything like normal proportions. The indications for their use are probably confined to producing cover for an open joint or an exposed flexor tendon.

Mount Vernon Centre
for Plastic Surgery,
Northwood, Middlesex

RAINSFORD MOWLEM
F.R.C.S.

Parliament

Mass Medication

IN the House of Lords on Jan. 27, Lord DOUGLAS of BARLOCH denounced as an infringement of the liberty of the subject and a danger to the health of individuals such projects of mass medication as the addition of chalk to flour, iodine to salt, and fluorine to public water-supplies. Each year by Government order 11,000 tons of chalk were added to our bread on the grounds that some people were not getting enough calcium. Even if this assertion were true, were the Government, he asked, entitled to force them to eat more of it by putting chalk in their bread? Furthermore the procedure offended against the basic code of medical practice. The dose was administered without any examination of the patient, without regard to age, sex, or physical condition, and irrespective of whether it was required or not. The proposal to add iodine to salt, he continued, now looked as if it were on its way out, owing to technical difficulties in providing suitable packaging materials. The latest example of mass medication was the addition of fluorides to water-supplies. In his view the experts who advocated fluorination as a means of reducing dental decay had paid scant attention to the physiologists and pathologists who had drawn attention to the possible hazards to general health.

Lord AMULREE could not agree that the practice of putting drugs into water-supplies and foods was the negation of medical practice. A doctor did not exist primarily to cure his patients, but to stop them from becoming sick. If by simple measures they could prevent a certain amount of disease, then they were not only doing good for the community, but carrying out an economic work as well. Lord WEBB-JOHNSON also protested against the suggestion that what Lord Douglas had described as "mass medication" was contrary to medical ethics. The addition of fluorine to water-supplies was not mass medication but the reinforcement of Nature's supply in a particular district.

Lord HANKEY agreed with Lord Douglas that it would be excessive to add fluorine to the water of the whole of the population to benefit children. Could we not find some way of giving fluorine to children during their formative years? As long ago as 1892 the late Sir James Crichton-Browne had stated in an address to the British Dental Association that the husky parts of wheat were the main source of fluorine-intake. He, too, regarded fluorine as the characteristic chemical constituent of tooth enamel and held that any deficiency during childhood must result in an inferior enamel. Lord Hankey suggested that the Government should ask their experts to consider this suggestion, for it would certainly be easier to feed young children on bread.

Lord CARRINGTON, parliamentary secretary to the Ministry of Agriculture, said that the addition of chalk to flour had been recommended by the British Medical Association committee on nutrition. In 1952 the National Food Survey showed that the national average intake of calcium was still 10% too low. The Committee on Medical and Nutritional Problems had also strongly recommended the addition of calcium to flour and their Lordships might be assured that this did no harm to anyone. He agreed that the practical difficulties of adding iodine to salt for domestic purposes had not been fully solved. The Food Standards Committee had not made their final report on this project and no decision had been taken. There was no scientific basis for the allegation that fluorides added to the water-supply in the recommended quantity of 1·0 to 1·5 parts per million had any harmful effect. In areas in England and Wales where there was already enough fluorine in the water no more would be added.

Nowadays, he continued, the Government had a general responsibility for ensuring the health of the people. This did not mean that the State must always act on scientific advice and force people to do what scientists thought was good for them. Experts of today were sometimes contradicted by those of tomorrow if not by other experts of today. But when an overwhelming case had been made out on scientific grounds,

and the Government were convinced that what was recommended was practical and good for the public health, then they must consider taking action of the kind which Lord Douglas had described as mass medication.

New Abortion Bill

In the House of Lords on Jan. 26, Lord AMULREE introduced a private member's Bill to amend a section of the Offences against the Person Act of 1861 which makes it a felony to administer drugs or use instruments to procure abortion. The Bill seeks to exempt a registered medical practitioner acting to preserve the life of a mother or acting with the concurring opinion of a second registered medical practitioner to prevent injury to the mother in body or health.

Recruitment of Nurses

Replying to an adjournment debate on this subject in the House of Commons on Jan. 28, Miss PATRICIA HORNSBY-SMITH, parliamentary secretary to the Ministry of Health, said that success in the general recruitment of nurses had been reflected in the increasing number of hospital beds. The number of full-time nurses in the hospitals had risen from 110,034 on Dec. 31, 1948, to 135,528 on Sept. 30, 1953, and of part-time nurses from 19,402 to 27,370. The Minister wished to see that the problem of distribution, which was perhaps the most acute problem, was solved. Generally speaking, they could claim to have obtained a fair share of the available woman-power. While they were not complacent about recruitment they had seen a steady increase, and there was no reason to be down-hearted or distressed about the situation in the general hospitals. Local shortages were being lessened by the standstill order whereby hospitals rich in staff could not increase or inflate their staffs until there had been a better distribution elsewhere. On the mental side, however, there was still a great shortage of nurses. The General Nursing Council had the power to relax the 18-year age-limit for entry to nursing where it affected the hospital service prejudicially. 26 hospitals had applied and the council had relaxed the rule for 6 of them. But all the organisations of the profession were agreed that relaxation was undesirable, and exceptions could only be made in a proven case of desperate shortage of nurses.

QUESTION TIME

Medical Services in the Gas Industry

In answer to a question Mr. L. W. JOYNSON-HICKS, parliamentary secretary to the Ministry of Fuel and Power, stated that 4 gas boards now have medical officers, 5 more are in course of appointing them, and 1 has arranged with the head of a university medical department to act as industrial medical consultant.

Acidity of Mineral Drinks

Replying to Dr. BARNETT STROSS, Dr. CHARLES HILL, parliamentary secretary to the Ministry of Food, stated that the pH figure for Cola drinks sold in the U.S.A. was 2·6, though a sample taken in this country was slightly less acid.

Dr. STROSS: Is the Minister aware that his answer shows that this drink is as acid as vinegar even if it be masked by the sugar-content of the drink. Is he aware of the evidence given before a committee of the United States Congress, in 1950, about the danger of this drink in relation to dental nutrition in that it caused teeth erosion? Will he check these facts through the M.R.C. to see whether these accusations were correct?

Dr. HILL: The level of acidity is only slightly more than the level for soft drinks containing acid generally. I am aware of the report published in the *American Journal of Nutrition*, and the Committee on Food Standards will, it is hoped, soon consider the position generally, including the question of acidity.

Powdered Milk

Replying to a question, Dr. HILL said that there had been comprehensive bacteriological tests of the milk-powder which caused the recent outbreaks of food-poisoning in schools and the conditions of production at the particular factory had been thoroughly investigated. As a result a code of practice for manufacture of dried milk was being prepared and this would be issued shortly to all manufacturers.

In England Now

A Running Commentary by Peripatetic Correspondents

SEVERAL months ago a friend of mine had a coronary thrombosis. He was fifty, looked ten years less, was full of energy and high-powered ideas, and was busy with a new scheme to increase production in his factory. His heart attack, unheralded and brutal, left him a chastened man. He had too much punch and endurance to allow things to get him down, but he gave the impression of a boxer who had been knocked about in the first round and was now sitting in the corner with his arms over the ropes, taking the measure of his opponent.

After several months I suggested he went away for a holiday. He said he would go to his favourite river in Skye to fish. I thought it would be the ideal holiday, peaceful and relaxing, and accordingly packed him off with my blessing and a generous supply of vasodilators and sedatives. He left, still with a quiet, defensive look in his eyes.

The day after his arrival he set off for the river. He had decided to fish for trout, using his light rod and spinner. He was still feeling "sucked-out" as he called it, and he intended to fish for an hour, pack up for lunch, and rest for the afternoon. He threw across the tail of a stream twice, and on the second cast knew he had struck a salmon. A salmon on a trout line.

After a short angry skirmish on the surface of the water it dived low and waited. My friend hurriedly packed away his pipe and with mounting excitement felt the thrill of the rod and reel in action under his hands. For the first time in months he was beginning to feel himself. He drew in a little to bring the fish away from its dungeon in the deep green pool under the rocks. He was hardly prepared for the mad race that followed, up stream and down, so quickly that he had yards of loose line on the water. He reeled in again and felt with relief the drag of his angry antagonist. The battle raged for forty minutes and it was then for the first time that his pain returned, and he knew that he had two enemies.

He was alone and he was tempted to cut the line and beat a retreat—to lie on the bank, to feel no more the heavy sway and tension on the rod, to rest and know he had not to fight. But, in a moment of grace, he understood that if he was afraid to risk his life then he would be afraid to live it afterwards. With his pain contracting down, hoops of steel ever-tightening, he slowly and with infinite effort wound in his line. And in a little while, longer than a lifetime, the gleaming belly of a salmon, drunk with fatigue, flickered and shook in the shallow at his feet.

When he saw me on his return there was no hint of defence or uncertainty in his voice. He looked extraordinarily well. I asked him if he wanted more tablets.

"No! My others dropped into the river. I have no need of them. I have defeated the enemy."

"Do you not fear his return?"

"If he comes again he will treat me with more respect. He will come as a friend."

* * *

Under the shadow of the Brandenburg Gate last week, the main item on the agenda of the Foreign Secretaries' conference was the relief of world tension, and their deliberations set me thinking of our local psychiatrist's complaint that most of his fancy diagnostic labels are in danger of becoming outmoded now that the neurosurgeons have developed their own criteria for leucotomy. Their main indication is emotional tension. "Give us a patient with tension" they say, "and we will guarantee to cure him of it."

On the way home that evening I looked more critically at my fellow travellers. The tight drawn faces of those who scurry underground, the tics on the opposite side of the carriage, the nicotine-stained fingers of the strap-hangers, the panic headlines in the papers, the restless irritation of the masses, all screaming betrayal of unrelieved tensions. What scope for universal leucotomy, what a rival to the long-established fashions of tonsillectomy and circumcision! All we have to do is to act on these indications, and the impact of leucotomy on

the civilised world will rank with the greatest religious and social revolutions of all time; for have not their driving forces always been the relief of tension in men's minds? No more need we be troubled by the antagonisms of marriage, or of overcrowding: with our approved schools empty, our law-courts deserted, and our prisons uninhabited we can enjoy the entire collapse of the gigantic welfare and penal machine which our society has built up for the by-products of mental tension. Guerilla strikes, lockouts, and reprisals, will alike be doomed to historical obscurity as the dawn of a new era of industrial relations glows around a universal banner of "Go Slow." The House of Commons will need rebuilding in circular form to accommodate the harmonious structure of one-party government, and international relations will be little more than friendly banter between leucotomised hemispheres. Pity our pre-temporal times.

* * *

I am glad that there was a fair sprinkling of doctors on the 1953 Everest Expedition, but I had not realised its full significance until I noticed the other day that some of them had visited the Royal College of Surgeons. They were there to give a lecture ostensibly, but I believe there were other reasons.

Controlled hypothermia is here to stay, and it seems to me logical that operations of the future should be carried out in theatres cooled to sub-zero temperatures. There will be a few practical difficulties, but those with first-hand experience of life on the South Col will, I am sure, be able to overcome them.

I noticed in the film that the boots used on Everest were not so very different from those worn even now in the theatre. Those quilted jackets and tea-cosy hoods will perhaps be slightly cumbersome, but with hypothermia there is no need to rush operations. Advertisements for a theatre sister will end "a knowledge of skating essential," and abdominal packs will be thrown back at her with cries of "not cold enough." There will be keen competition among the surgical registrars as to who can grow the longest beard. Someone will have to think how to stop spectacles frosting over, and I believe a boilable ice-axe is already in production. Is it too fanciful to imagine the senior surgeon—in order to conserve his strength—being drawn into the theatre by a team of huskies bred in germ-free laboratories?

* * *

A perplexed visitor from the States came to see us the other day and remarked that the poliomyelitis virus certainly got around in England—and particularly in *The Lancet*. He had read of it in narrow streams one week and in deep underground channels the next; and last week a peripatetic angler wrote authoritatively of eddying backwaters. Indeed, he exclaimed, it had even been spilled around from bottles—and in a leading article too. For our part, we said, the hypothesis about narrow streams of virulent virus and broad streams of avirulent virus had a compelling simplicity—perhaps because it was founded on good logical principles without too much sentimental regard for the facts. We pointed out that it was only necessary to postulate that virulent infections were caused by virulent virus and avirulent infections by avirulent virus, and then the development of virulent infections from contact with avirulent cases could be explained by a disagreeable mutation of avirulent to virulent virus and vice versa. Surely, our friend objected, this required the introduction of a few waterways to join up the narrow streams and the deep underground channels, or the addition of a second bottle with a two-way siphon arrangement. But then, he said kindly, he always knew English plumbing was a power in the land.

* * *

"How is your giddiness, Mrs. Rice?"
"They're all right, thank you, Doctor."
"How do you mean *they're* all right?"
"Why, have I only got one of them?"
"Look here, what *are* we talking about, Mrs. Rice?"
"I thought you asked after them."
"After *what*?"
"My kidneys."

Letters to the Editor

IS YOUR TONSILLECTOMY REALLY NECESSARY?

SIR,—The Widdicombe File should be acquiring a fine reputation for teaching the practical application of intelligent reasoning; the article on "orgs." (Oct. 10), for example, deserves a prominent place in almost every book for medical students and in all works on otorhinolaryngology.

The recent letter on tonsillectomy, however, shows only one side of the picture. "Jan Stewer" is to be thanked for insisting that the tonsils (and adenoids) should not be removed on the unlikely chance that this will banish some symptom or sign improbably connected with these organs. Most E.N.T. surgeons, far from advising such surgery, spend a good deal of time withstanding pressure from other doctors and from parents who wish to persuade them to operate.

I would entirely agree that the appearance of the tonsils is usually much less important than an accurate account of the number and severity of attacks of tonsillitis; and, on the question of adenoids, evidence of nasal obstruction or middle-ear trouble is of most diagnostic value. Unfortunately, many general practitioners and parents do not give a clear history, the usual reasons being lack of ability or opportunity for accurate observation and description.

Dr. Stewer is a pædiatrician and doubtless sees much of the failures of tonsillectomy and less of the successes; for the latter cases usually go from the general practitioner to the E.N.T. surgeon, and the benefit of the operation is such that they do not need referring back to a pædiatrician for further advice.

It must be admitted that it is difficult for an E.N.T. surgeon to "follow up" these cases, although many of us at least see them a few weeks after operation, and the fact that general practitioners continue to send them suggests that they do well. MacBeth and Hadfield [1] presented a report showing very satisfactory results in their cases. The figures given were remarkably similar to those I have compiled relating to children whose parents were carefully questioned immediately before operation and who were asked the same questions about one year later.

London, W.1. NORMAN A. PUNT.

OBSERVER ERROR

SIR,—The recognition of the inaccuracy of some physical signs began 30 years ago with a comparison of cardiac size as determined both by percussion and by radiography. It is curious that an awareness of the frequency of "observer error," discussed in your leader of Jan. 9, should have coincided with the increasing use of a system of grading physical signs and symptoms. Such a grading has been applied to things related (dyspnœa, intermittent claudication); to things seen (retinopathy); to things heard (systolic murmurs, heart-sounds); and to the interpretation of things seen (pulmonary hypertension judged by radiographs and electrocardiographs). It may be agreed that a method of grading, to be useful, should be capable of exact assessment by the average observer, should be universally accepted and generally understood, and should denote a classification of value not easily and quickly to be described in prose.

In the classification of dyspnœa there are two rival systems, but the New York Heart Association terminology is the more popular; in the grading of retinopathy Wagener's method has no opponent. Both methods are convenient, but is it more exact, more intelligible, or more elegant to say that the patient has a grade-IV

1. MacBeth, R. G., Hadfield, E. H. *J. Laryng. Otol.* 1950, **64**, 591; *Proc. R. Soc. Med.* 1950, **43**, 324.

dyspnœa, than to say that he is dyspnœic at rest? In describing a retinopathy, the student has his best opportunity of recording a visual impression, so why encourage him to a shorthand report? The grading of intermittent claudication (taught to medical students) is truly superfluous, since the intelligent patient always provides his own yardstick.

To grade a systolic murmur by its intensity of sound—and six gradings are taught—is to describe but one of its five important characters, and possibly the least significant. In the grading of splitting of the second heart-sound, one source of observer error, inexperience, has been utilised, and a grade-I splitting is defined as that unperceived by the tyro. Such a grading not only assumes that experience and auditory acuity are synonymous but has naturally led to derisory anecdotes, and a grade-I splitting has been described as one heard only by the High Priest and a grade-III splitting as one that even "Dr. X" can appreciate.

The basic objection to grading is that it tends to eliminate from the minds of the observer and his audience the notion that he may be mistaken. If I look at a film and say "the pulmonary arteries are moderately enlarged," anyone may reply "I don't see what you see"; but if I look at a film and say "this man is suffering from grade-I pulmonary hypertension," the only possible retort is "I don't mean what you mean," for I have assumed a halo of mathematical exactitude.

The proposition before your readers, Sir, is that, while the grading of signs and symptoms may occasionally be valuable to the knowledgeables, it can have no useful place in medical education.

Derby. DOUGLAS HUBBLE.

POLICY FOR "PREMATURES"

SIR,—May I congratulate you on the interesting and topical leading article of Jan. 2? It is necessary that publicity should be given to a subject which has such an important bearing on the neonatal-mortality rate, the reduction of which has been slow in comparison with the total infant-mortality rate.

Your article, however, has gaps in the description of the evolution of recent work in this field, notably the lead and fine example which Dr. Ethel Cassie, of the Birmingham local-health authority, gave by setting up the first special unit in this country for premature infants, to which you refer. The work of this unit has since been successfully carried on and extended by Dr. Mary Crosse. Further, you do not mention the part played by the Ministry of Health in promoting interest and work in this branch of "antenatal pædiatrics." The care of the premature child was a subject referred to the Minister's advisory committee on mothers and young children, and, as a result of the committee's findings in 1943, an official circular was issued in March, 1944. This circular, for the first time, gave local-health authorities advice on a comprehensive scheme for the care of the premature child, from both the administrative and clinical angles. The circular recognised the difficulties of putting such schemes into effect in war-time, but asked the councils to bear them in mind in planning the future development of their services. A new impetus was thus given to local-health authorities, and few Ministry of Health circulars have elicited a greater response.

One of the early difficulties was the lack of statistical material, and the circular contained a request for information on the incidence of prematurity. The supply of this information gave the Ministry an opportunity to compile more detailed annual returns, which have been invaluable in assessing the size of the problem, the survival-rates, and the relative values of hospital and domiciliary care.

Subsequently, schemes were initiated by a number of local-health authorities, including those in Newcastle and Bristol, both of which are mentioned in your article. Such schemes, to be successful, must have as their basis close collaboration between the hospital and the local authority—a problem which has lessened as a result of the official appeal for coöperation.

The Ministry's practical interest in this subject included arrangements for incubator trials at selected hospitals and the loan of different types of incubator for comparative study.

I think it is important that these matters should be drawn to your readers' attention, for they help to provide a more accurate picture of the sequence of events in the evolution of the care of the premature child in this country. It is only right in this connection to indicate the important part played by the Ministry of Health in weaving the present pattern of research in this relatively new field of work. Regarded so frequently as an "Aunt Sally," there is a tendency for the worth-while enterprises of the Ministry to be obscured or to pass unrecorded.

East Horsley, Surrey. G. I. BRODIE.

POSTURAL ISCHÆMIA AND BLOOD-PRESSURE

SIR,—Dr. Enderby (Jan. 23) states: "No quantitative estimations of cerebral blood-flow under such conditions have been reported."

Using his conditions—namely, hexamethonium bromide and a head-up tilt—to attain a relatively bloodless site for operations on the head, I have estimated the cerebral blood-flow (C.B.F.) by Kety's nitrous-oxide method. The results already obtained show a considerable reduction in C.B.F. during hypotension compared to the previous C.B.F.

In the following case the C.B.F. was reduced from 58 to 32 ml. per 100 g. of brain per minute (Kety estimated cerebral blood-flow under thiopentone anæsthesia to be 60 ml. in a series of 10 cases):

A man, aged 29. Operation, mastoidectomy. Preoperative blood-pressure, 130/80 mm. Hg. Anæsthesia: induction with thiopentone 500 mg., suxamethonium 40 mg.; maintenance with thiopentone drip.

Before hexamethonium bromide given: 10° head-up tilt, blood-pressure 125/90, C.B.F. 58·1 ml. After hexamethonium bromide given: 5° head-up tilt, blood-pressure 60/45, C.B.F. 32·2 ml.

The cerebral arteriovenous oxygen difference was also increased in a series of 17 cases, the average increase being 3·7–4·3 vols. oxygen per cent.

The effects on cerebral metabolic rate (C.M.R.) in terms of millilitres of oxygen consumed per 100 g. of brain per minute can be assessed from the formula:

$$\text{C.M.R.} = \text{C.B.F.} \times \frac{(A - V)O_2}{100}$$

When there is too great a fall in C.B.F. and the arteriovenous oxygen difference does not increase sufficiently the formula will show a decreased C.M.R.

I suggest that there is no valid reason to expect a decrease in cerebral metabolism under these conditions of hypotension, and such a reduction may indicate cerebral hypoxia. My results are not yet complete enough for me to state that I have found this occurrence. Clinically, there has been no evidence of cerebral hypoxia in the cases studied.

Department of Anæsthesia,
University of Liverpool. GOUGH HUGHES.

SIR,—Dr. Enderby suggests that the blood-flow through a tissue depends on the local arterial pressure and that in the reversed Trendelenburg position the brain will be supplied with less than its usual quota of blood while other vital organs will receive more. He assumes that bleeding at operation is a guide to blood-flow through the cut tissue, and I believe that this is a misconception. Bleeding at operation depends on the difference in pressure between the blood in the cut

vessels and the atmospheric pressure, and on the radius of vessels cut. Blood-flow through the tissue does not depend on atmospheric pressure, but on the pressure-difference between arteries and veins, or, to be more precise, between arterial and venous ends of the capillaries. Elevation of a limb has, I believe, as great an effect on the pressure in the veins as in the arteries and the pressure-difference is not necessarily altered. Consequently the blood-flow may be maintained though bleeding is slight. These principles can be demonstrated by arranging a rubber tube to act as a siphon and by cutting across it at its highest point when there is a steady flow through it.

These considerations apply particularly to the brain if the skull is intact, but do not necessarily apply if the brain is exposed. The skin and the more superficial tissues are exposed to atmospheric pressure from without, and the dependent limb becomes engorged because the absolute pressure in the small vessels is greater than atmospheric. The raised limb is not engorged because the pressure in the small vessels may be little above atmospheric. Momentarily the small vessels collapse completely on raising the limb and this effectively stops the blood-flow. The principles of hydrostatics now apply and flow will only start again if the blood-pressure at heart level is sufficient to raise the blood to the level of the raised limb. The same argument applies to the exposed brain, and I would imagine that after injection of hexamethonium the reversed Trendelenburg position is more dangerous during operations inside the skull than during operations on the face or scalp.

The converse argument applies to " other vital organs." The blood-flow is not necessarily higher because the local arterial pressure is higher.

Nuffield Department of Industrial Health, Medical School, Newcastle upon Tyne. G. L. LEATHART.

THE MALADJUSTED SCHOOL

SIR,—I was much interested and pleased to see Dr. Model's letter (Jan. 23). I think it is extremely valuable that people should point out the limitations and alternatives to the outline scheme which I suggested, and I would entirely agree with Dr. Model that, in theory at any rate, there is a place for the kind of school he describes, and that such a school, properly run, is an extremely valuable contribution to this problem.

My remarks about the coeducational school are really based on the very difficult problems these schools tend to arouse—difficult in themselves, but even more so, I think, because of the attitude of public opinion to them. So, while I feel, with Dr. Model, that this is an important aspect of treatment in children, I feel both that we need to be very careful in our selection of schools, and that, having accepted them, we should be prepared to support them against public opinion if difficulties arise.

I would like, at this point, also to comment on the very interesting scheme run by the London County Council that was described in your issue of Dec. 12, in which my own article appeared. Again, one feels this is a very useful contribution, but there are two points about it that I think need to be made. The first is that such a scheme is almost limited to an authority of the size of the L.C.C.; no other single authority is big enough to be able to fill the school, maintain contact with the parents by their regular visiting, and allow the children the gradually increasing freedom of going home for more and more time. One can imagine that a combined scheme between other big authorities, such as Liverpool and Manchester together with the Lancashire County Council, or Sheffield, Leeds, and Bradford together with the West Riding of Yorkshire, might also run such a school, but they would need to be combined, and they would find much more difficulty in the type of contact described by the L.C.C. experiment. Aside from these thickly populated areas, the scheme would be unworkable. I think this is an important point to make, because otherwise people might feel this is the ideal kind of establishment to set up everywhere.

The other feature about this scheme is that it is obviously designed for the less severely handicapped children and for relatively short-term treatment. Otherwise the turnover could not be anything like as quick as is described in this experiment; and that, I think, is further evidenced by the fact that the L.C.C. does send its severer cases out of its own area and to schools which offer longer-term treatment. Clearly they feel themselves that this particular arrangement is not designed for the severer types of personality disorders.

Department of Psychiatry, University of Leeds. W. MARY BURBURY.

COLLEGE OF GENERAL PRACTITIONERS

SIR,—At the Old Bailey recently an employee of the College of General Practitioners was convicted of obtaining money from the bank by forgery. We would like it known that the college's bankers have now re-credited the college's account with the whole of the sum involved.

G. F. ABERCROMBIE
Chairman of council
H. L. GLYN HUGHES
Hon. treasurer
J. H. HUNT
Hon. secretary.
14, Black Friars Lane, London, E.C.4.

CERTIFICATES

SIR,—Mr. Van den Bergh (Jan. 16) voices a justifiable grievance. Dr. Tripp in his reply (Jan. 23) makes suggestions which are identical in principle with those which I have myself made without success to one large industrial concern during the last few years.

Mr. Van den Bergh's difficulty is only one part of a wider problem which has many facets, some of which I will enumerate.

With the creation of the Welfare State we have, as a nation, provided a very wide range of benefits which become available to all under certain conditions. The evidence required to establish the fact that a particular contingency has arisen is, in most cases, medical. The practice of many enlightened employers of continuing to pay their employees during a period of illness is a comparatively modern development harmonising with the social advances which, integrated, make up the Welfare State.

It is unfortunate that the coming into being of these widespread social advances has coincided with a period of testing when the general moral fibre and integrity of the mass of the people is at a lower level than has been known for many years. It is not my intention to discuss the many reasons for and examples of this state, which were beautifully enunciated by Lord Samuel in a recent address.

It is widely acknowledged that there has been, in recent years, a decline in the respect of the community in general for the medical practitioner. In my view this decline is associated not only with the appointment of the doctor as the arbiter in the issue of many of the benefits conferred by the State but with a degree of laxity in certification resulting in lack of respect for a medical certificate.

I believe that the majority of doctors wish to do everything they can to restore the lost confidence. Nevertheless it is true to say that there are many who have ceased to set themselves a very high standard in the matter of certification. The lowered standard of behaviour in this respect is, as Dr. Tripp suggests, often due to compassion for a worker about to lose pay or some State benefit and is seen in many doctors whose absolute integrity in other respects is beyond reproach.

In a small proportion of doctors, however, I am convinced that the lowered standard of certification has

no such motive but is part of a deliberate effort to attract patients and thereby increase income. Small though the number of such doctors may be, it is sufficient to influence the standard of certification of the remainder of the profession by economic pressure, for all are concerned to survive and succeed in practice.

Any departure from the highest standards of certification must:

(*a*) Increase the drain on the Exchequer and on the moneys of the National Insurance scheme, which is already threatened with an increase in the weekly contribution;

(*b*) cause a fall in the productivity of industry—it has been estimated that the elimination of unnecessary absenteeism could increase production by 10%.

A solution to this social problem must involve the coöperation of the entire community. There must be, in the fullest sense of the words, a reawakening by the mass of the people to their responsibilities as well as to their rights. Whatever may be done by any group within the community to improve the present state of affairs, the problem cannot be solved without a return to some of the moral standards of behaviour of the past. I would direct attention again to the moving words of Lord Samuel. My suggestions are:

(1) In order to ease the burden on both doctor and employee, employers should trust their workers by allowing a limited period of absence from work without loss of pay and without medical certificate; the privilege to be withdrawn in any case in which the employer feels that it is being abused. Alternatively, employers may prefer to grant the privilege initially only to employees in whom they feel able by reason of his or her record to place trust.

(2) Details of such a scheme should be discussed between representatives of the employers and representatives of the medical profession, and some uniformity of certification requirements agreed upon and then made known throughout the country in every place of employment.

(3) Any employee who is not given the trust of his employer should be notified by the employer that a medical certificate, which covers the entire period of his absence, must be produced at the time of his return to work and such certificate must state clearly the date on which the patient was examined by the doctor and express an opinion on the fitness of the employee for work. It is not, in my view, essential that the nature of the patient's illness should be disclosed.

(4) In accord with the decision of the representative body of the B.M.A. at Cardiff last year, no medical certificate should ever be issued concerning a period when the doctor was not in attendance.

(5) Employers must, in contrast to the present habit of many, accept the responsibility for recognition of the honest employee. This would include the acceptance of the statement of an employee about occasional absence from work for such reasons as family bereavements or serious illness of a relative. I have the impression that some employers seek to shelter behind the doctor by encouraging their workers to obtain medical certificates which the employer knows to be inaccurate rather than accept the responsibility of taking disciplinary action against an employee who has erred.

(6) The professional organisations must do everything within their power to raise the standard of medical certification by: (*a*) recommending the exclusive use of a simple form of certificate on the lines I have already suggested (the old Ministry of Labour certificate is useless in this connection and merely encourages doctors to compromise with their conscience); and (*b*) withdrawing the privilege of membership from doctors who can be proved to have certified dishonestly.

(7) Both employers and the Government departments concerned must accept the responsibility of referring to the General Medical Council any case in which they have overwhelming evidence of dishonest certification.

I hope that these proposals will at any rate provide a basis for discussion of an urgent social problem, the solution of which would not only go a long way in raising the esteem in which the profession is held but would contribute in no small degree to our national recovery.

Sunderland. IVOR M. JONES.

BRITISH PSYCHIATRY

SIR,—Professor Lewis, in the article [1] to which you refer in your annotation (Jan. 9), mentions the temporary troubles of British psychiatry incident to human affairs in 1953. Amongst these are included the shortage of human resources and the grim old buildings. Such shortcomings as these must inevitably be to some extent interrelated. As far as the psychiatric units of London teaching hospitals are concerned, some feel that the separation of these units (in varying degree) from their parent hospital buildings likewise hinders solution of the staff problem.

The separation of psychiatric units from their parent teaching hospitals is no doubt due to the difficulty of providing the necessary space and grounds in a large and long-established city; but there can be advantage as well as disadvantage in the arrangement, for since psychiatry has found a greater need of social concepts than has, for example, general medicine, the separation can be used to emphasise an orientation toward the normal society to which patients return, rather than an undue preoccupation with pathology to the exclusion of treatment.

London, W.11. J. P. CRAWFORD.

SALARIES OF WHOLE-TIME SPECIALISTS

SIR,—With the arguments of Dr. Gilchrist's letter (Jan. 23) no whole-time consultant will disagree, but I would like to correct and emphasise his point about the amount of work done in the National Health Service by whole-time specialists. He suggests that "one-third of the consultant work is done by whole-time specialists" and the whole tenor of his letter indicates that he includes S.H.M.O.s as specialists. With this point I agree, but on this basis it would be more correct to say that two-thirds of the consultant work of the country is now being done by whole-timers. It is difficult to get figures for the country as a whole, but on the last occasion when a check was made in the South West Metropolitan Region, it appeared that, counting by sessions, a full two-thirds of all consultant and specialist cover was given by whole-time men. When allowance is made for travelling-time and other factors, it is probably true for this region that 70% of the cover is given by whole-timers; and for the country as a whole I am quite certain that a corresponding figure could be worked out.

Kingston-on-Thames, Surrey. D. STARK MURRAY.

CORTISONE DESENSITISATION

SIR,—In his article of Jan. 30 Dr. Long has pushed his explanation of the mode of desensitisation in the guinea-pig a step forward. His hypothesis depends on the assumption that cortisone facilitates the oxidation of ascorbic acid to its first oxidation product, dehydro-ascorbic acid. Dr. Long and his colleagues have produced in the past a considerable weight of circumstantial evidence for this assumption. Would it not now be wise for this assumption to be put to a more direct test, especially as the evidence in the human points to the exact opposite—that is, cortisone seems to facilitate the reduction of dehydro-ascorbic acid to ascorbic acid? Stewart et al.[2] have shown that cortisone alters the proportion of ascorbic acid to dehydro-ascorbic acid in the plasma in favour of the reduced form. Their work has lately been confirmed by Harkness and Donovan.[3] We have shown [4] that cortisone causes a fall in the electrode potential of the subcutaneous tissues, which again lends support to the view that cortisone facilitates the reduction of dehydro-ascorbic acid to ascorbic acid—the opposite change to that suggested by the Long hypothesis.

1. Lewis, A. J. *Amer. J. Psychiat.* 1953, **110**, 401.
2. Stewart, C. P., Horn, D., Robson, J. S. *Biochem. J.* 1953, **53**, 254.
3. Harkness, J., Donovan, C. *J. clin. Path.* 1953, **6**, 330.
4. Loxton, G. E., Le Vay, D. *Nature, Lond.* 1953, **171**, 524.

This apparent contradiction in experimental results may, of course, be due to a species difference. The position would be clarified if experiments similar to those of Stewart et al. were repeated in the guineapig, and experiments similar to those of Dr. Long and his colleagues were repeated in the human.

The Brook Hospital, London, S.E.18.

GEOFFREY E. LOXTON
DAVID LE VAY.

TRAINING OF NURSES

SIR,—In your issue of Jan. 9 (p. 112), it is announced that the Minister of Health and the Secretary of State for Scotland have appointed a working party to consider what training is appropriate for registered nurses and enrolled assistant nurses prior to their employment on home-nursing duties and the means by which such training should be provided.

It is high time that more consideration was given to the training of nurses in hospitals. I have been interested in, and concerned with, the theoretical training of student nurses for some twenty years. My view is that the broad basis of a nurse's training should be : (*a*) an initial period of essentially practical training ; (*b*) subsequent periods of specialised training. This view may not be generally held, but there is a widespread belief that radical changes should be made in the nursing curriculum. The authorities responsible for the Health Service should, without delay, arrange for this question to be examined anew.

The student nurses at this hospital are very successful in their examinations. My criticism of the nursing syllabus is based on the belief that patients need nurses who have been trained to meet requirements which differ, in some respects, from those laid down by the General Nursing Council.

Broadgreen Hospital, Liverpool, 14.

L. FINDLAY.

ESTIMATION OF PLASMA-INSULIN

SIR,—Dr. Vallance-Owen and Mr. Hurlock, in their article in your issue of Jan. 9, present a graph (fig. 3) which suggests a very close and constant relationship between their estimates of blood-sugar and plasma-insulin levels in fasting men. The closeness of this association is such as has, I believe, never previously been demonstrated between distinct constituents of the blood. These series of estimations are more closely correlated than those of such related variables as hæmoglobin and red-cell counts ; indeed, they are as closely correlated as many simultaneous estimations of the same substance. That any two secretions from separate tissues should be so constantly related, even in the same individual, is far too good to be true.

Other evidence against this substance being insulin is provided by the unexpectedly small errors in its estimation, and by a comparison of these errors with those from table II in the article.

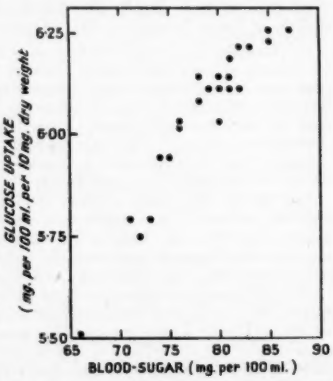
From the points of fig. 3, I calculated the standard error of the discrepancy between the observed plasma-insulin levels and their estimates from the calculated regression line, finding it to be 2·9 micro-units or 4·4% of its mean ; the standard error of its estimation cannot exceed this. This maximal estimate of the standard error must be considered suspiciously low for any hormonal assay even allowing such inherently unlikely assumptions as that the whole of the very considerable day-to-day variation took place at night (the standard error estimated from fig. 2 at the mean plasma-insulin level of the observations was over 25% of the mean) and that the kinks at the points in this figure are not abstractions, the uptake being linear between these arbitrary points.

In the estimations given in table II, when known insulin was being estimated, the standard error of the percentage discrepancy was 8·9%. This, although not mathematically identical, would be expected to be less than that from fig. 3, because, firstly, standard insulin is presumably less variable than human insulins from different persons and, secondly, the estimates were at insulin levels from 10^{-4} to 10^{-3} units per ml. where, according to fig. 2, the response per logarithmic unit is about double that at the lower level and where the day-to-day variation is less effective.

These large differences, the reverse of those expected, very strongly suggest that either the technique, or the substance estimated, or both, were different. Insulin was obviously being estimated in table II, and there seems every reason to suppose the technique constant.

These considerations together provide overwhelming evidence that, whatever was being estimated in fasting adults, it was not insulin, and that it was some substance whose level in the plasma was closely correlated with that of blood-sugar. The simplest hypothesis is that this substance was, in fact, blood-sugar, and that, as far as the rat diaphragm is concerned, blood-sugar cannot be imitated by adding sugar to blood.

The plasma-insulin level was estimated by assuming its logarithm to be a linear function of the glucose lost to muscle. From the points in fig. 3, I have calculated the uptake, in mg. per 100 ml. per 10 mg. dry weight, for a "standard diaphragm" with the characteristic uptakes of 4 and 6·5 units at 10^{-5} and 10^{-4} units of insulin per ml., the uptake being linear between these points. This apparent liberty of standardising a variable is justifiable in that it will increase, rather than diminish, any discrepancies. These results are represented in the accompanying figure. The points clearly suggest a linear relationship, as is to be expected from their original linearity in fig. 3. The calculated regression line of glucose uptake on "blood-sugar" shows an uptake of 3·4 units at zero blood-sugar. In view of the approximations inevitable in such inverted calculations, this particular line should be regarded as merely one of the more respectable of a family of lines to which these points approximate, and which suggest that in the absence of "blood-sugar" the glucose uptake would be from 2 to 4 units.



Graph plotting the uptake of glucose by a "standard" diaphragm from the sweetened plasma of fasting adults against their blood-sugar levels. Glucose was added to this plasma to standardise its total concentration.

The uptake of glucose from this sweetened fasting adult plasma may clearly be regarded, on the available evidence, as consisting of two components, one constant (the combined level of "glucose" and "blood-sugar" was constant throughout) and the other directly proportional to the "blood-sugar." The nature of this constant component is not clear. On extrapolating the lines of figs. 1 and 2 in the article by Dr. Vallance-Owen and Mr. Hurlock, there is evidence of a similar constant component independent of the level of insulin ; the alternative to this interpretation is that insulin is measureable down to 10^{-5} units per ml. It is not quite clear from the text what controls were set up. These constant components are of the same order as would be expected from diffusion into the muscle fluids.

The hypothesis that "blood-sugar" is a particular state of glucose which cannot be simulated by adding glucose to blood, but which has evaded discrimination in vitro, is very unlikely. A more likely hypothesis, which would appear consistent with all the observations, including the discrepancies, is that there is some factor liberated or activated in exact molecular proportion to glucose during its endogenous formation and withdrawn or inactivated in like proportion during its utilisation, and that this factor, which would obviously maintain a constant proportion to the "blood-sugar," is responsible

for the variable component of the glucose uptake. Its inhibition by cysteine and glutathione suggests that its action has some stage in common with that of insulin.

Further knowledge of this possible factor would seem particularly desirable in that it may be of value in increasing the utilisation of glucose in acute, and even chronic, ketosis and in making it possible to give "blood-sugar" parenterally.

London, N.W.10. JOHN EDWARDS.

MEDICINE AND THE WELFARE STATE

SIR,—In his lecture, published in your issue of Jan. 16, Dr. Macaulay puts a surprising point of view about the administration of a modern hospital.

Firstly, he describes a hospital as essentially medical. But a hospital is a complex organisation containing medical, nursing, auxiliary, ancillary, administrative, and clerical staff: the whole makes a team. Just as an infantry officer would be useless without his men, so a doctor in a hospital would be very ineffective without the other members of the staff.

Secondly, in every hospital problem, with the exception of the actual diagnosis and the prescribing of treatment, there is a three-sided viewpoint—medical, nursing, and lay. It seems to me that the lay point of view can only correctly be put by an administrator who is not a doctor or nurse.

Thirdly, Dr. Macaulay refers to lay administrators. Would your readers not agree that a doctor (or nurse) who has no administrative training or qualifications is also a "lay" administrator? A lawyer, an economist, a qualified secretary, or an accountant is not by any means a "lay" administrator.

Fourthly, he suggests that "lay" administrators are being rapidly and superficially trained. But what training in administration has the average doctor had?

Fifthly, he shows little understanding of secretarial practice and committee procedure when he fears the dictatorship that may come from "lay" control. An administrator takes his orders from the board or committee which usually contains a very fair proportion of medical men. Where is the dictatorship? Strangely enough, one of the very criticisms of medical superintendents is the fact that they often insist on being Lord High Executioners.

Sixthly, I find it very difficult to understand why the coördinator of the whole medical team should not be the chairman of the medical advisory committee; and the coördinator of each specialty the senior consultant concerned. The coördinator of the hospital, however, must be the administrator, in his position as the personification of the board or committee.

Lastly, the administrator, whether medical or lay, should be a professional administrator, and this brings me to a point of agreement with Dr. Macaulay. "He should be suitably rewarded for his heavy responsibilities and be endowed with sufficient power and responsibility to carry out his duties." The vacuum which Dr. Macaulay mentions is being created by the appallingly low salaries offered to unit administrators.

CHARTERED SECRETARY.

SIR,—There have been few constructional criticisms of the National Health Service to compare with Dr. Macaulay's brilliant address to the Middlesex County Medical Society. This sincere and well-balanced analysis deserves close study by the profession and its representative bodies because it is a clear signpost along the path which medicine is following.

There has been a plethora, in the past, of speeches by politicians, group secretaries, and the like, from which, it seems, the National Health Service should be judged solely by the Administration, and we are often told that it is the "envy of the world." Exactly what evidence there is of world envy to justify this, now common, cliché is not very evident, unless it had its origin in the number of Frenchmen who once came seeking free spectacles.

Danger lies in the growing split between medical and administrative factions in the hospital service, and Dr. Macaulay deplores the denigration of the medical director. I wonder if this is the happiest title for the post which Dr. Macaulay has in mind, but there can be little doubt that some authoritative liaison between the medical staff and the administrative hierarchy is desirable if the essentially medical nature of a hospital is not to be lost beneath an avalanche of bureaucratic complacency.

No non-medical administrator can ever hope to cope effectively with the multitude of human problems, some trivial, others vital, which crop up daily in the little world of the hospital. The occasional clash of personalities, the exuberance, sometimes perhaps misdirected, of the resident staff, the little grievances real or imagined; these are things which need the skilful tactician, trained and familiar with human failings, and these are things which are bound up with what Dr. Macaulay calls the "spirit" of a hospital—a very real thing which those of us who spend our working hours in hospital have long recognised, but which is fast disappearing.

Many consultants mistrust the medical-superintendent system as a threat to their own departmental autonomy. It is difficult to understand the basis for this since the interests of both are surely the same—the attainment of efficiency with medical interests paramount. Working in South Africa, where medical administrators form a well-developed specialist service, I never met one who did not earn the respect and friendship of every class of hospital worker. Nevertheless, these doctors need training and experience. Medical administration could become a specialty on its own merits: it could save much of the fantastic expense of hospital management; free many consultants for essentially clinical work; absorb many able doctors who now see little hope in competing for the few consultant posts which the State is able to pay for; and, above all, restore to the hospitals the saneness of human Medicine.

Taunton. RAYMOND GAVIN.

BRONCHIAL NEOPLASM WITH MYASTHENIA

SIR,—The description of a case of bronchial neoplasm with myasthenia by Dr. Anderson and his colleagues in your issue of Dec. 19 and the subsequent correspondence prompt us to record a further case which was under our care five years ago.

A male storekeeper, aged 63, was first seen as an outpatient at the West Middlesex Hospital on Dec. 15, 1948. His only complaint was of weakness of the legs and arms of six weeks' duration, most evident on climbing stairs or rising from a chair. There was no relevant past or family history. He had suffered some loss of appetite and had always smoked 20 cigarettes a day.

Physical examination revealed no abnormality. A chest radiograph showed slight enlargement of the upper mediastinal shadow of doubtful significance. One month later this shadow had greatly increased in size, and the patient was admitted under the care of Dr. M. M. Deane.

By this time, muscular weakness had become greater in extent and severity; such was his difficulty in climbing stairs that he had to pull himself up with his arms; sustained or repetitive muscular effort as in chewing, talking, swallowing, walking, and sitting up in bed was also more difficult. The symptoms were worse in the morning than in the evening. Very recently he had seen double and complained of cough and a bursting sensation in the head on bending down. On examination, there was bilateral ptosis and drooping of the angles of the mouth; the speech was slurred and some words were dropped. Pathological fatigue, evidenced by progressive weakening and finally paralysis of muscle movement, could be readily demonstrated in the eyelids, the chewing and swallowing muscles, and the limbs. Tendon reflexes were all weak. Percussion of the chest showed an area of dullness two inches to either side of the manubrium sterni. Posteriorly

over the upper thoracic spine, bronchial breathing could be heard. The external jugular veins were filled to the angles of the jaw.

Normal power was re-established in all muscles by the subcutaneous injection of 1·5 mg. of neostigmine with 0·4 mg. of atropine, enabling him to walk without fatigue for the first time in some weeks. Oral neostigmine, in doses up to 120 mg. daily, had little effect and his symptoms were relieved by 1·5 mg. subcutaneously three times a day.

The thoracic mass appeared on screening to be confined to the anterior mediastinum; a diagnosis of myasthenia gravis with a rapidly growing thymoma was made. The patient was transferred to Harefield Hospital, but signs of mediastinal obstruction quickly developed and he died before operation could be attempted.

Necropsy revealed a large mass in the superior mediastinum infiltrating both lungs and compressing the superior vena cava. Though the site of the mass suggested a thymic carcinoma, the histological appearance was that of an "oat-cell" carcinoma of the lung. Careful re-examination of the fixed specimen which had been preserved intact showed that the mass originated from a small submucosal nodule in the right upper lobe bronchus.

A notable feature of this case is the apparent relationship between the rapid enlargement of the tumour mass and the worsening of myasthenic symptoms. It also exemplifies the difficulty in determining clinically the site of origin of a mass in the anterior mediastinum; although often associated with a benign tumour of the thymus, myasthenia gravis has rarely been described with a malignant thymoma as this was thought to be. This further example of the myasthenic syndrome with carcinoma of the lung heightens the significance of their association.

St. Mary's Hospital, London, W.2. V. M. BORRELLI
HARRY KEEN.

SIR,—There is no reference to any skin changes in the cases of bronchial carcinoma recorded by Dr. Anderson and his colleagues (Dec. 19) and by Dr. Mackenzie and Dr. Shafar (Jan. 9); but the progressive muscle weakness, which was the initial complaint of each of their patients, sounds remarkably like the myasthenia of dermatomyositis.

There is undoubtedly an occasional relationship between carcinoma and the symptoms of dermatomyositis; and carcinoma of the bronchus, as well as carcinoma at other sites, has been found subsequently in patients seen by dermatologists for erythematous skin rashes accompanied by myasthenia.[1] In a review of the records of 45 cases of dermatomyositis, Curtis et al.[2] found that 8 had some form of malignant disease; carcinoma of the breast was present in 2 cases, but otherwise there was no uniformity in the type of malignancy. The onset of the myasthenia and skin changes preceded the discovery of the malignant disease by an average of eighteen months. Clinical improvement occurred in the skin and muscles following treatment of the neoplasm, but apparently there was no exacerbation of the symptoms of dermatomyositis when the malignant disease progressed or metastasised.

In a patient of my own[3] the symptoms of acute dermatomyositis—namely, rapidly progressive myasthenia with dysphagia in conjunction with an erythematous dermatitis of the face and exposed parts resembling intense sunburn—developed while she was convalescing at the seaside fourteen months after operation for carcinoma of the ovaries, which however had been too extensive for complete removal. She became totally unable to swallow, but otherwise the myasthenia and also the dermatitis improved despite metastasisation of the growth, from which she died. I have also seen recently a man with typical acute dermatomyositis who died within a few months of the onset of the myasthenia and dermatitis, and at autopsy a carcinoma of the stomach was discovered which had caused no symptoms at all.

It would seem advisable to suspect the presence of carcinoma in any patient with progressive myasthenia of unusual type, and to examine the skin for an accompanying rash of an erythematous character, which otherwise might be overlooked or not considered relevant.

London, W.1. E. W. PROSSER THOMAS.

1. See *Proc. R. Soc. Med.* 1951, **44**, 880.
2. Curtis, A. C., Blaylock, H. C., Hurrell, E. R. jun. *J. Amer. med. Ass.* 1952, **150**, 844.
3. Prosser Thomas, E. W. *Brit. med. J.* 1953, i, 101.

CORTISONE IN BELL'S PALSY

SIR,—Your annotation [1] and the letter [2] by Dr. Whitty described the apparently beneficial effects of cortisone given early in Bell's palsy. This leads me to record the development of Bell's palsy in a patient under treatment with cortisone for rheumatoid arthritis.

A woman, aged 40, had suffered from rheumatoid arthritis for six years. Treatment with cortisone began on Oct. 20, 1953, the dose being 300 mg. daily for five days, then 200 mg. and 100 mg. daily for five-day periods, and finally 25 mg. daily as maintenance therapy. The symptomatic response was excellent, but on Nov. 28, while taking 25 mg. of cortisone a day, an almost complete lower-motor-neurone facial palsy appeared on the right side.

Though of interest, this observation may lack significance in view of the small dose of cortisone being taken for the twenty-four days preceding the appearance of the Bell's palsy.

St. Vincent's Hospital, Melbourne, Australia. W. HAMILTON SMITH.

THE INSULIN MYTH

SIR,—Dr. Bourne's very sound article in your issue of Nov. 7 greatly interested us, all the more so because, in 1939, we published an article [3] on "Katamnestic investigations on insulin-shock and convulsion therapy of schizophrenia." Here, "convulsion therapy" means treatment with leptazol ('Cardiazol').

We compared insulin, leptazol, and conservative treatment in three groups, making a total of 419 schizophrenic patients. Concerning the immediate outcome, we found that improvements (complete or good remissions) took place in 27·1% of the insulin group, 22·8% of the leptazol group, and 20·2% of the conservative group. Follow-up improvements comprised 30·6% of the insulin group, 22·8% of the leptazol group, and 35·6% of the conservative group.

The surprising result was that the best remissions were achieved in the "inactive" group. If we followed the courses of treatment *individually*, it was evident that only half of the insulin improvements could be ascribed to the insulin itself—leaving only 15% improvements in the insulin group!

Scrutinising the remissions in our groups in the light of the duration of illness before treatment or admission to hospital, the results in early cases were analysed as shown in the accompanying table.

COMPARISON OF RESULTS IN EARLY CASES (0–6 MONTHS)

Treatment	Patients improved (%)	
	On discharge	On follow-up
Insulin	31·1	32·1
Leptazol	21·6	28·1
Conservative	27·0	46·1

Studying the follow-up improvements of the different forms of schizophrenia, we found the highest proportion of improvements in the "mixed" group; in this group insulin-treated and conservatively treated patients did equally well (66–70% improvements). In the "paranoid" group the figure for insulin-treated patients was 35%,

1. *Lancet*, 1953, i, 1188.
2. Whitty, C. W. M. *Ibid*, 1953, ii, 86.
3. *Z. ges. Neurol. Psychiat.* 1939, **166**, 28.

and for conservative treatment 38%. We finally concluded that there was little difference between the results in the insulin and conservative groups, so we share Dr. Bourne's opinion that the value of insulin is a myth.

TIBOR LEHOCZKY
Budapest. MARGARET LEHOCZKY.

ON CREDULITY

SIR,—I am glad to see that I have not been the only one to be dismayed at Lord Moran's oration (Jan. 23). He seems to assume that quackery and empiricism, on the one hand, are identical, and, on the other, that science is to be found within the doors of the Colleges—and quackery-empiricism the moment one steps outside.

I suggest that quackery is a state of mind and not merely a matter of whether or not one holds a medical qualification; while the boundary between science and empiricism is indefinable. Were it not for people who might be called empiricists—i.e., who try methods and theories which have not been led up to by logical science—the world would be very much the poorer in many fields, including our own. Is the one who makes a mental jump—Einstein, for example—an empiricist? If so, let us have more of them: provided, of course, that their theories and results hold good on scientific testing.

A colleague once said to me as we came out from a rather unorthodox demonstration of a certain psychiatric technique, "It has no warrant in science": hence, according to him, it was not worth further investigation. Surely, if on prima-facie grounds results indicate that the method may have something to it, it would be scientific to try it—and then, if need be, to change the "science" one had before. Otherwise, any advance in science becomes infinitesimal.

London, S.W.3. L. J. BENDIT.

THE SIMPLE GANGLION

SIR,—Mr. McEvedy (Jan. 16) rightly stresses the unsatisfactory results of excision in cases of simple ganglion. A similar experience led me some years ago to evolve a method of treatment which I believe to be satisfactory and free from complications. The method is briefly as follows:

The ganglion is transfixed by a large serum needle, after raising two small weals with local anæsthetic. Through the hollow needle is passed, by means of an ordinary straight suture needle, two or three threads of thick thread or silk, well soaked in tincture of iodine. The needle is withdrawn leaving the "iodine-soaked" setons in situ. Knots are tied at the ends of these and the mucoid material squeezed out through the puncture wounds. The area is covered by gauze and the part immobilised in a light plaster cast. One week later the plaster cast and the setons are removed. The two small puncture wounds are quickly healed with little scarring.

I have not known of recurrence following this method of treatment, but I must confess I have no careful statistical follow-up to support this contention; it is possible that past house-surgeons, registrars, and general practitioners of the South-West, to whom I have taught this method, may write to refute my claim!

Bath. C. PATRICK SAMES.

URETHRAL APOPLEXY

SIR,—I was interested to read your annotation of Jan. 2, but I was terribly disturbed by the last sentence: "the timely use of a sphygmomanometer may save the patient the discomfort and the surgeon the trouble of unnecessary endoscopy."

Whilst hypertension is common, it is a very rare cause of hæmaturia and surely the bitter lesson to be learned from so many advanced cases of carcinoma of the bladder and kidney that are eventually referred to surgical outpatients, is that no case of hæmaturia can be considered inconsequential until its cause has been discovered by a full urinary investigation including endoscopy. Indeed, the latter, performed at the time of bleeding, may be the only way of diagnosing the cause of the hæmorrhage.

I am sure that you were fully aware of this and felt that you were confining your remarks to cases of urethral bleeding—for you specify "lower genital tract"—but not only is the phraseology dangerously ambiguous but it is often difficult to be certain that bleeding is really from the urethra. I therefore feel that this ambiguity should not be allowed to lull any of us into dangerous delay in undertaking a full urinary investigation in all cases of hæmaturia whether they have hypertension or no.

St. George's Hospital, London, S.W.1. D. H. RANDALL.

SHORTAGE OF MENTAL NURSES

SIR,—Your admirable leading article of Jan. 16 brings out the main factors underlying the shortage of mental nurses with insight and sympathy, and clearly defines some of the means of relieving the situation. The shortage of male student nurses is almost entirely due to the low pay relative to that of other trainee posts, such as policemen, firemen, and post-office engineers. The shortage of female student nurses has much more complex causes, of which the small salary is certainly one, but probably more important are the bias of parents against their daughters taking up mental nursing, and the myth, fostered by the nursing profession, that mental nurses—and for that matter tuberculosis and fever nurses—are of poorer social status than general nurses.

Even if these difficulties are overcome, I think there will still be insufficient nurses of the right type, until we can bridge the gap between school-leaving age and 18. Many girls at the age of 15 are eager to nurse, but, not being able to do so and having to earn some money, start work in office or shop. Girls with sociable, likeable personalities (in fact, those most suitable for nursing) tend to get on well and to make friends, and not unnaturally, at the age of 17 or 18, they are unwilling to give up their jobs and their circle of friends in order to start work in a hospital with its quite different, and often longer, hours. For this reason cadet schemes, which must occupy a girl from the time she leaves school and offer her a living wage, are in my opinion essential, despite the extra cost to the National Health Service.

I cannot let Dr. Minski's letter (Jan. 23) pass without trying to correct the quite wrong impression it gives of a nurse's work in a mental hospital. I can assure Dr. Minski that in any progressive mental hospital in this country even the most "chronic" patients spend no more than an hour a day in the ward gardens, and that, according to all the doubly-trained nurses I have consulted, less time is spent on giving the patients their meals in a mental hospital than in a general hospital. Sedatives are now given far less frequently to chronic mental patients, even of the most disturbed type, than to those suffering from anxiety states, and I have no doubt that more doses of sedative per patient are given in a neurosis centre than in a mental hospital—while giving aperients probably occupies one nurse per ward less than 20 minutes per week. The life of the mental hospital nurse has become much more varied and interesting than it was 15 years ago, and embraces all kinds of social, recreational, and occupational treatment, assisting at the various physical treatments, and a quota of sick nursing.

Dr. Minski's scheme of including three different types of hospital (acute psychiatric, chronic mental, and neurosis) under one medical and nursing administration presents manifold difficulties, fully appreciated by those

with experience of large groups of hospitals, and would be, in my opinion, a retrogressive step. The modern mental hospital treats these three types of patient in different units or wards within one compact estate with no expensive administrative duplications, apparently inevitable in groups of hospitals. Dr. Minski thinks his scheme would enable nurses to be used more advantageously in the type of nursing they prefer, but at present any competent mental-hospital matron uses her nurses to the best advantage of the hospital and themselves, allotting them, after they have had training experience in all types of ward, to look after the type of patient most suitable to their abilities and interests.

Finally, I should like to say a few words on the wastage of student nurses, which on present figures seems unduly high. Seriously understaffed hospitals are forced to take on applicants who would not have been considered before the late war, with the hope that a few of them will settle down satisfactorily. Many of them are of the type that flits from job to job, and some are frankly unsuitable. It is the type of applicant rather than the hospital set-up that underlies the wastage, which can only be avoided by attracting more and better applicants.

Bexley Hospital, Kent. L. C. COOK.

Medicine and the Law

Doctor Protected as a Public Authority

A PATIENT, seeking damages for negligence, issued a writ against the part-time specialist in charge of the physical-medicine department of a hospital. The writ was issued more than a year after the alleged cause of action had accrued; but counsel for the plaintiff argued that it was now well-established law that consultants were independent contractors for whose negligence hospital boards were not liable; and that accordingly they could not claim the protection of the Public Authorities Protection Act, 1893, as re-enacted by section 21 of the Limitation Act, 1939.[1] Mr. Justice Pilcher has ruled, however, that the defendant doctor is protected under this section, which provides that no action shall be brought against any person "for any act done in pursuance, or execution or intended execution, of any Act of Parliament or of any public duty or authority or in respect of any neglect or default in the execution of any such Act, duty or authority" unless the action is begun within one year from the date when the cause of action accrued. (This is the date when the damage is suffered—not the date of the act which brings about the damage.) The doctor was acting in execution or intended execution of a duty imposed by the National Health Service Act, 1946, and so had the benefit of the section. He was acting as agent for the hospital board and could properly be described as an officer of the board. The board had a duty under the 1946 Act and the orders made thereunder.

Lord Wright's Law Revision Committee reported to the Lord Chancellor in 1936 its proposals for simplifying the law of the limitation of actions. One of their recommendations was an enlargement of the period of six months in the Public Authorities Protection Act, 1893, to twelve months. They said they found in the 1893 Act a clear policy to protect absolutely the acts of public officials "after a very short lapse of time" from challenge in the courts. They thought this might be justified where there were "important administrative acts," but they observed that most of the litigation under the 1893 Act arose over the alleged negligence "of municipal tram drivers or medical officers and the like"—how far the residuary defendants resembled tram-drivers and how far medical officers the Law Revision Committee omitted to state. Anyhow they saw no very good reason why such cases should receive special treatment merely because the alleged wrongdoer was paid out of public funds. Accordingly the consolidating and amending Act of 1939 extended the six months' protection to one of twelve months. Even so, it has protected the defendant doctor when this preliminary point was taken before Mr. Justice Pilcher. It cannot be assumed, of course, that the practitioner who is not acting in pursuance or execution of an Act of Parliament or a public duty or authority will receive the same protection.

Meanwhile a private member's Bill seeking to make all periods of limitation 3 years has been introduced with Government support into the House of Commons; and on Dec. 4 this received a second reading and was referred to a standing committee.

1. *Times*, Jan. 30, 1954.

Public Health

Estimate of Births

THE Registrar-General[1] estimates that in the quarter ending March 31 this year live births in England and Wales will number 172,000. The provisional estimate for the quarter ending June 30 is also 172,000, giving an estimated total in the first half of this year of 344,000. Last year there were 171,705 and 179,464 live births registered in the first two quarters, making a total of 351,169.

Eire in the Third Quarter

In Eire during the September quarter of last year[2] the birth-rate was 21·3 per 1000 population; the rate in the third quarter of 1952 was 21·1. The death-rate was 9·7 per 1000 population, compared with 9·9 for the corresponding quarter of 1952. The death-rate from tuberculosis was 0·3 per 1000 population (respiratory 0·2, other forms 0·1); in the September quarter of 1952 the figures were 0·4 (0·3 and 0·1). The maternal-mortality rate was 1·5 per 1000 births registered, a decrease of 0·1 from the 1952 rate; and the infant-mortality rate was 33 per 1000, compared with 36 in 1952.

1. Registrar-General's Weekly Return for England and Wales, no. 3, 1954. H.M. Stationery Office. Pp. 20. 1s.
2. Quarterly Return of the Marriages, Births and Deaths registered during the September Quarter, 1953. Obtainable from the Government Publications Sale Office, G.P.O. Arcade, Dublin. Pp. 13. 6d.

Obituary

DONALD SAGE SUTHERLAND

T.D., M.D. Glasg.

Dr. D. S. Sutherland, who was for many years medical superintendent at Monsall Fever Hospital, Manchester, died on Jan. 9 in Edinburgh at the age of 78.

He was the elder son of the late Rev. Donald Sutherland of Inverness-shire, and he was educated at Garnetthill School, Glasgow. He graduated M.B. at Glasgow University in 1898 and obtained his M.D. with commendation in 1903. After holding the usual junior house-appointments Dr. Sutherland decided to specialise in infectious diseases and he was a senior medical officer of the Metropolitan Asylums Board Fever Service before he was appointed superintendent at Monsall Hospital, Manchester. As clinical lecturer to the faculty of medicine of the University of Manchester, he took a keen interest in the bedside instruction of his students at Monsall Hospital.

In the South African War and in the first world war, he had a distinguished military career, attaining the rank of brevet colonel. He retained an interest in the Territorial Army and acted as medical officer to the Manchester Artillery; and in the second world war, although he had already retired from active medical work, he served as medical officer to the Home Guard in Westmorland. He was an active member of the Highland Society and the Glasgow University Club at Manchester.

Dr. Sutherland is survived by his second wife and two young sons.

Notes and News

FUNDAMENTAL RESEARCH

A TRIBUTE TO PROFESSOR KREBS

ON Jan. 27 the medical faculty group of the Friends of the Hebrew University of Jerusalem held a dinner in London to celebrate the award of the 1953 Nobel prize for physiology and medicine to Dr. H. A. Krebs, F.R.S., professor of biochemistry in the University of Sheffield.

Sir HENRY COHEN, who presided, recalled how Professor Krebs, after qualifying in 1925, worked with Otto Warburg at Berlin from 1926 to 1930, and with Gowland Hopkins at Cambridge from 1933 to 1935, before going to Sheffield. In the course of his fundamental study of metabolism he had described his two cycles in 1932 and 1937—"the latter known as the Krebs cycle, though he dislikes the eponym." At Sheffield he had thrown himself into the practical studies of nutrition necessitated by war; and the hospitality given him by Gowland Hopkins had been repaid a thousandfold, said Sir Henry, by his work both for this country and in the pursuit of truth. As a leader and teacher he had instilled the element of genius that makes possibilities into realities. The object of the Friends of the Hebrew University was to enable others to carry on the torches handed to them by men like Professor Krebs. They were proud of the reputation he had made and of the esteem and love he had evoked.

The AMBASSADOR of ISRAEL (Mr. Eliahu Elath), after paying tribute to Professor Krebs, spoke of the vital need for a university medical faculty in Israel, with its problems created by the mass immigration of the past few years. Thanks largely to the help of the Friends of the Hebrew University, some 45 students and teachers from Jerusalem were now studying in British institutions, where they had received a friendly welcome. The Ambassador hoped that strong and permanent links would be forged between "the best of our young people" and the younger generation in this country. Here they shared in freedom of thought and research, and on going home they would help to make their own land stable, liberal, tolerant, and anxious to play its full part in the development of its area.

After Sir BEN LOCKSPEISER had joined in proposing his health, Professor KREBS said that life, like his hosts, had been kind and generous to him. He had had the good fortune to be able to continue his training, more or less full-time, for some years after qualification, and had then held posts that gave him the essential prerequisite of good work—time. Scientists were often expected to teach and to stand on their own feet before they were mature enough, and through lack of time many talented people in universities never got the chance to show what they could do. It was not always appreciated how much time modern research needed: "in my own subject anyone who has to devote more than, say, one-third of his energy and time to matters not directly concerned with research will find it very difficult indeed to undertake a major piece of research even if his is not a 40-hour week, or 50-hour, but, as I believe it is for most active research-workers, a 60 to 70 hour week." Some people asked whether a university was still the place for major investigations; and certainly some aspects, especially of applied research, might have to be done elsewhere. But it would be bad to detach research from a university unless this was absolutely necessary; for students got inspiration from being at a place distinguished for research, and to the research-worker it was of great help to be among colleagues in all sorts of other departments. Doubt had also been thrown on the appropriateness of fundamental research in a young country like Israel where so many practical problems needed attention; but it was hard to overestimate the importance of carrying out, and training students in, such work. In his autobiography Robert Millikan, the American physicist, said that the most important single cause of American ascendancy in economic, military, and political power was the creation, at the end of the first world war, of the National Research Fellowships; and history showed that a thorough training in fundamental sciences was also the best preparation, for the scientist who eventually was to do applied research in industry or agriculture—for the simple reason that it widened his resources. To those engaged on fundamental work it was gratifying that Nobel himself, and those who interpreted his will, should look on fundamental research as something benefiting mankind in an important way, though its practical applications might be remote.

Dr. ALEC LERNER said that in honour of Professor Krebs's achievements a fund would be raised for the promotion of fundamental research in the faculties of medicine and science at the Hebrew University.

A.C.S. AT R.C.S.

THE American College of Surgeons is to hold a sectional meeting at the Royal College of Surgeons in London, from May 17 to 19. Among the speakers will be surgical teachers from the United States, Canada, and the British Isles, and the programme will include papers, panel discussions, and symposia on cardiovascular surgery, preoperative and post-operative care, hæmorrhage from the gastrointestinal tract, the surgery of the adrenals, and the surgery of the hand. Separate meetings will be held for several of the special groups, and clinics and demonstrations will take place in London teaching hospitals. The chairman of the committee on arrangements is Sir Cecil Wakeley, F.R.C.S., the hon. secretary is Mr. Lawrence Abel, and the members are Sir Stewart Duke-Elder, Sir Gordon Gordon-Taylor, and Prof. Lambert Rogers.

WORLD HEALTH ORGANISATION

IN his introductory statement to the executive board of the World Health Organisation on Jan. 20, Dr. M. G. Candau, director-general of the organisation, suggested that the regular budget for 1955 be set at $10,200,000, an increase of $1,700,000 over the budgets approved for 1953 and 1954. Dr. Candau said that three-quarters of the additional sum would be used for field operations. Reviewing W.H.O.'s work in the past five years, he put on the positive side of the balance sheet the fact that the organisation's present structure is now well established and sound. On the other hand, a number of requests for help, fully justified from the point of view of world health, could not be met because of lack of money. The director-general said that a more adequate regular budget was essential.

BLOOD DYSCRASIA DUE TO CHLORAMPHENICOL

IN a memorandum the Ministry of Health points out that after the publication of American reports of blood dyscrasia due to chloramphenicol, the Antibiotics (Non-Tuberculous Conditions) Committee of the Medical Research Council decided to collect information on similar cases in this country. As a result of this inquiry over the past two years, with the addition of a number of cases notified directly to the manufacturers, details of 31 cases have now been collected; and these are analysed by Dr. Hodgkinson, whose report appears on p. 285 of this issue. It is impossible, says the Ministry, to determine from this investigation the frequency with which blood dyscrasia follows chloramphenicol, since the total population at risk is unknown and this inquiry was by no means comprehensive. It is apparent that the incidence is low, since the condition is usually fatal and cases would therefore come to notice. When excessive dosage is avoided, the incidence must be very low indeed; thus no cases have arisen during the Medical Research Council's controlled therapeutic trials in pneumonia, whooping-cough, and infantile gastro-enteritis. The memorandum concludes: "It cannot be too strongly emphasised . . . that the use of chloramphenicol is not without risk and prolonged or repeated administration (especially of large doses) should be avoided particularly in conditions such as chronic respiratory and urinary tract infections."

DESIGN AND FUNCTION

SIX years ago the Nuffield Provincial Hospitals Trust set up a team to study the functions and design of hospitals. Interim reports on their work have already appeared in the medical and architectural press; experimental buildings, designed to test their conclusions, are being built; and their final report will be published this year. Meanwhile the Trust have been asked whether the work could not be continued on a more permanent basis, and the Nuffield Foundation have been approached by other bodies who wish to see the methods of the hospital investigation applied to other types of building—such as laboratories and farm-buildings. The trustees of the Foundation, after consultation with the trustees of the Trust, accordingly set up on Jan. 1, as part of the Foundation's headquarters' organisation, in the first place for ten years, a division for architectural studies. The new division, under the directorship of Mr. Richard Llewelyn

Davies, A.R.I.B.A., the present director of the hospital investigation, will continue investigations into hospitals and begin a study of research laboratories. In their hospital project the division plan to make the care of children in hospital the first centre of their studies. In the study of laboratories attention will be focused, in the first instance, on research laboratories rather than on those designed primarily for teaching.

PART-TIME MEDICAL OFFICERS' SALARIES

COMMITTEE C of the Medical Whitley Council has agreed that part-time public-health medical officers who are paid an annual salary related to full-time pay should be paid, not on a flat-rate, but in accordance with the appropriate incremental salary-scale. From April 1 this year, the salaries of the medical officers concerned will accord with the incremental point which they would have reached if this arrangement had been in force when they took up the appointment with the employing authority.

BRITISH JOURNAL OF ANÆSTHESIA

THE *British Journal of Anæsthesia* is celebrating in no mean style its entry into a second quarter-century of publication; for henceforth it is to appear six times yearly, instead of quarterly as hitherto. The January issue appears in a new format with an attractive new cover, quarto instead of octavo pages, and the text set in double instead of single columns. One new feature is an educational supplement designed to include information on educational activities and articles of general interest to the trainee. "Maybe too," say the Editors, "those responsible for teaching both postgraduates and undergraduates will find here encouragement, a source of information and a forum of opinion." The publishers are Messrs. John Sherratt & Son, St. Ann's Press, Park Road, Altrincham, Cheshire; and the annual subscription remains unchanged at 42*s*.

ZOONOSES

IN November, 1952, medical and veterinary workers from many countries met in Vienna to discuss the zoonoses.[1] Perhaps fifteen of the eighty zoonoses are important in Europe, but the meeting had time to deal with only 5. Bovine tuberculosis is rapidly disappearing in Denmark and elsewhere, but in several European countries it still accounts for 10% of all tuberculous infections. Children living on farms are often infected by inhaling the bovine bacillus, and Swiss workers have shown that conventional views about the immunity of goats are not altogether justified. Pasteurised milk helps to diminish the incidence of tuberculosis and of brucella infections; but we may think too often of raw milk as the only common source of human brucellosis. In about 40% of 466 cases described in 1938 there was no history of drinking milk although the patients had had contact with farm animals. Experimentally it seems to be easier to infect animals through the intact or shaved skin than by mouth, and the conjunctival and respiratory routes should be remembered in human brucellosis.

Much of our knowledge about leptospiral infection has come from the Netherlands, and it may surprise some bacteriologists to find that 20 groups of these organisms can now be distinguished with absorbed antisera. At least 8 different types of the disease occur in the Italian rice-fields. In Switzerland serious leptospiral outbreaks have occurred among pigs and horses, while in some European countries 40% or more of the dogs show antibody to *Leptospira canicola*. In both leptospiral disease and in Q fever the reported incidence depends mainly on the extent of laboratory facilities. The number of proven cases of Q fever in Great Britain is comparatively small, but 2% of cattle in England and Wales and 0·8% in Scotland have rickettsial antibodies. There seem to be great variations in the incidence of Q fever, and there is still much doubt about its mode of transmission: in central Italy it appears regularly at the time of parturition of small ruminants, but in the islands it arises all the year round. In Europe we think of Q fever as airborne, but in the U.S.A. it is usually regarded as an alimentary infection. Fortunately there is no doubt about the mode of infection in rabies, and for a bite from a suspected animal it is better to apply 20% concentrated liquid soap than the classical cauterisation with fuming nitric acid.

1. Advances in the Control of Zoonoses. W.H.O. Monograph Series, no. 19. H.M. Stationery Office. 1953. Pp. 275. 15*s*.

GETTING WARMER

MONTHLY and annual values of the mean maximal, mean minimal, and mean temperatures for 1921–50 at 206 stations (143 in England, 46 in Scotland, 14 in Wales, 2 in Northern Ireland, and 1 in the Isle of Man) have been compiled by the Meteorological Office and published by the Air Ministry.[1] The figures given are not for individual years but for the entire period and are therefore of less medical interest than they might have been; one could otherwise have compared one year with another and sought any possible correlations between weather and disease—e.g., poliomyelitis.[2] Though a comparative table is given for the periods 1901–30, 1906–35, and 1921–50, it is based on figures derived from only 7 stations (6 in England and 1 in Scotland). This somewhat limited table makes it look as if in 1921–50 the summers were becoming warmer and the winters slightly colder, the net result being a small increase in warmth.

NUTRITION IN SOUTH AND EAST ASIA

THE F.A.O. Nutrition Committee for South and East Asia held its third meeting in Bandung, Indonesia, in June, 1953. The report of this meeting[3] is in seven sections which cover rice milling; protein malnutrition in mothers, infants, and children; endemic goitre; calcium in human nutrition; vitamin-A deficiency; vitamin-B_2 deficiency; and education in nutrition and the training of workers for nutrition. Perhaps the first impression that the report gives to a reader in Britain is that it contains nothing new. This, however, is only a half truth. For if indeed we have enough basic scientific knowledge to solve the urgent problems in Asia, we are still a long way from being able to apply this knowledge. Indeed there is no grand solution, but rather, as the report makes clear, a variety of possible solutions for a host of local problems. The variety of circumstance—dietary, social, and economic—is such that a successful public-health nutrition programme now requires a variety of workers each well-informed about particular local customs and conditions. The committee, after considering the report of the F.A.O./W.H.O. Expert Committee on Nutrition which met in the Gambia in 1952, "expressed the view that the description of severe kwashiorkor in the report could in general be taken as applicable to the deficiency as it appears in this region." Thereafter a list of local differences in the manifestation of the disease follows; but the reader is left in no doubt that the committee considered kwashiorkor essentially the same disease in Asia as in Africa—and almost equally important in the two continents.

University of Oxford

On Jan. 21 the following degrees were conferred:

B.M., B.Ch.—J. G. Bateman, B. C. Morson.

University of Cambridge

On Jan. 23 the following degrees were conferred:

M.D.—W. M. Keynes, Brian Schofield, W. H. Simonds, O. H. Wolff.

M.B., B.Chir.—D. E. Corlett, * Harry Eaton, R. D. France, * Ee Keng Lee, F. McP. Low, R. H. Morgan, H. H. Shawdon, * C. P. D. Tong, * Lawrence Wilkinson, H. J. Wood.

* By proxy

Elmore Research Studentships.—Elections will shortly be made to these studentships which are tenable in the department of medicine. Preference will be given to candidates with an interest in hæmatology. Further particulars will be found in our advertisement columns.

Royal College of Surgeons of England

Dr. T. Cecil Gray will deliver the Joseph Clover lecture at the college, Lincoln's Inn Fields, London, W.C.2, on Wednesday, March 17, at 5 P.M. He will speak on Disintegration of the Nervous System.

A unit for research into the physiology of wound healing is to be set up in the department of physiology of the college. This has been made possible by an initial grant of £5000 from Messrs. T. J. Smith & Nephew Research, Ltd., and it is to be known as the H. N. Smith Research Unit.

1. Averages of Temperature for Great Britain and Northern Ireland 1921–50. London: H.M. Stationery Office. 1953. 2*s*.
2. See *Lancet*, 1949, ii, 808, 856.
3. Report of the Nutrition Committee for South and East Asia, Third meeting. H.M. Stationery Office. 1953. Pp. 38. 2*s*.

Royal College of Physicians of London

At a comitia of the college held on Jan. 28, with Sir Russell Brain, the president, in the chair, Dr. G. E. S. Ward was reappointed external examiner in medicine for the Faculty of Radiologists.

The following having satisfied the censors' board were elected to the membership:

J. H. Angel, M.B. Camb., L. S. Basser, M.B. Sydney, D. W. Beaven, M.B. N.Z., S. A. Biggart, M.B. Durh., Captain R.A.M.C., C. C. Booth, M.B. St. And., L. A. G. Davidson, M.B. Edin., Nanette M. De Coek, M.B. Sydney, D. S. P. Dickson, M.B. N.Z., Joan Frankton, M.D. Lond., Bernard Goldberg, M.B. Witwaterstrand, D. J. Gudex, M.B. N.Z., Abraham Guz, M.B. Lond., Ah Leng Gwee, L.M.S. Singapore, D. R. W. Haddock, M.D. Lpool, Rosemary Hart, M.B. Lond., W. B. Hennessy, M.B. Sydney, A. R. Kagan, M.B. Lond., M. J. Livera, M.D. Lond., M.B. Ceylon, C. M. Luke, M.B. N.Z., B. R. B. Lumb, M.B. St. And., C. P. Newcombe, M.D. Lond., D. J. O'Sullivan, M.B. N.U.I., T. J. Parkinson, M.B. St. And., T. G. Paxon, M.B. Lond., J. W. Platt, B.M. Oxfd, J. D. Pollitt, M.B. Lond., Olive M. Riddle, M.B. Lond., F. C. Rose, M.B. Lond., Theodore Schlicht, M.B. Melb., M. D. Sopher, M.B. Calcutta, W. B. Thomson, M.D. Lond., D. W. Vere, M.B. Lond., R. A. D. Wigley, M.B. N.Z., J. D. Williams, M.B. Lond., Audrey S. Willis, M.B. Camb., L. A. F. Young, M.B. Melb.

Licences to practise were conferred upon the following who have passed the final examination of the Conjoint Board:

M. R. Alderson, P. L. R. Baker, R. C. Benians, John Blagdon, J. W. Brooks, A. M. Brown, H. M. Buckland, D. J. E. L. Carrick, K. C. Carstairs, A. P. Carter, L. A. Charkin, M. C. Clarke, A. C. M. Codd, Ronald Conroy, A. G. Cox, M. H. Day, A. M. J. De Soysa, Derrick Dodshon, J. S. Dudek, J. E. O. Dunwoody, J. P. Dymoke, Harry Eaton, R. W. Edmonds, A. K. Edwards, D. A. M. Ellis, J. S. Farries, Eva L. Fisch, E. R. Gibbons, A. E. R. Gibbs, D. A. Gill, A. G. Graham, W. P. Hadlow, M. A. Hargreaves, Ruth D'A. Hart, K. J. Hayes, H. S. Heap, J. E. Herbert, Peter Hinds, Betty Holt, G. L. Howe, D. J. Hudson, J. S. Hughes, Harold Jacobs, E. P. James, T. M. James, J. G. Jeffreys, A. McL. Keil, Barbara H. Kerley, Alan Kirkbright, D. A. Lightley, A. F. M. Little, D. E. Longden, K. L. Lowings, M. F. Luke, B. N. McAdam, R. F. McCormack, C. C. Mahase, A. G. Malleson, Bernard Martin-Smith, S. E. Mbanefo, M. G. Miller, Mona D. Mulligan, Celia M. Oakley, D. B. A. Ofomata, R. H. V. Ollendorff, R. O. Ormerod, Mary G. Paine, E. G. Palmer, A. J. Pearson, E. J. K. Penikett, Aileen B. Ridout, M. S. Robertson, H. C. Rolfe, Anatol Rootstein, Ronald Rose, Victor Roseverne, D. H. Rubens, D. G. Scott, J. R. Scott, Erwine M. Skeens, J. K. Snell, Froma Somerville, Helen F. Taylor, F. S. Ferner, C. E. A. Thomas, J. W. Thomasson, J. G. Thomson, T. S. B. Thomson, M. J. Uglow, I. P. Vaughan, T. G. Wadsworth, Leonard Walker, Mirabel M. G. Walker, Leonard Weiss, H. A. Whitehouse, Marian A. Wilkinson, Harry Wilson, Hazel M. Wilson, H. J. Wood, S. H. Wydell, W. V. Younger.

The following diplomas and those mentioned in our issue of Jan. 23 (p. 219), were conferred jointly with the Royal College of Surgeons.

D.A.—I. R. Haire.

D.P.H.—J. H. Bennett, D. M. Blomfield, L. H. Botha, P. L. G. Cole, J. W. Doupe, R. L. Goodey, Robert Handy, James Haworth, S. G. Lamb, H. G. Skinner, Hugh Stott, Dhanvant Gajanan Vyas, D. J. Wilson.

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on Jan. 30, with Mr. A. A. Gemmell, the president, in the chair, the following were elected to the membership:

G. T. D. Barr, D. J. Cassidy, Vivienne A. Croxford, Haider Fahmy Daghistany, P. J. Dwyer, A. L. T. Easton, D. W. S. Gordon, T. P. Grant, John Greenwell, Kenneth Greig, R. W. Hughes, G. A. Humphreys, P. D. C. Jackson, K. B. Layton, C. V. Love, A. C. McInnis, Peter Manolis, Mrinmoyee Mukerji, F. A. Murray, R. F. O'Donoghue, G. D. Pinker, D. E. Savage, Satwant Ganda Singh, H. J. Tighe, J. R. D. Tomlinson, A. C. Turnbull, Rama Vaish, P. S. Watson, V. T. White.

Chadwick Public Lecture

Dr. C. Banning, chief medical officer of public health of the Netherlands, will deliver a Chadwick lecture on Thursday, April 22, at 26, Portland Place, London, W.1, at 5.30 P.M. The subject of the lecture will be Antenatal, Natal, and Postnatal Care in the Netherlands.

University College Hospital Medical School

Prof. G. L. Brown, F.R.S., will deliver the Sydney Ringer lecture at the medical school, University Street, London, W.C.1, at 5 P.M. on Thursday, March 18. He will speak on Studies on the Sympathetic Nervous System.

The Nutrition Society

At a meeting of this society at University College Hospital Medical School, London, W.C.1, on Saturday, March 13, at 10.30 A.M., Dr. D. Lawson will speak on the Gluten-free Management of Cœliac Disease, Dr. R. Passmore on Clinical Stigmata of Nutritional Deficiency, Prof. B. S. Platt on Infant Feeding Practices, and Mr. B. Woolf, PH.D., on Statistical Aspects of Nutrition Surveys. Further particulars may be had from Dr. R. J. L. Allen, c/o Monkhouse & Glasscock Ltd., Snowsfields, London, S.E.1.

Oxford University Medical School

The office of the secretary of the medical school, dealing with both preclinical and clinical business, is now at Osler House, 43, Woodstock Road, Oxford.

Congress of Otolaryngology

The fourth Pan-American Congress of Otolaryngology and Broncho-esophagology will be held in Mexico City from Feb. 28 to March 4. Professional bodies in this country have been invited to send representatives.

British Postgraduate Medical Federation

The dates of the lectures in the series on the Scientific Basis of Medicine by Lord Stamp and Dr. J. V. Dacie have been reversed and Dr. Dacie will now speak on Tuesday, Feb. 9. Further particulars will be found in the Medical Diary.

Chesterfield Medal

The examination for the Chesterfield medal in dermatology will be held at the Institute of Dermatology, St. John's Hospital for Diseases of the Skin, Leicester Square, London, W.C.2, on Monday and Tuesday, March 8 and 9, and Wednesday and Thursday, March 17 and 18. Particulars may be had from the dean at the institute.

Oxford Radio-isotope Conference

A second Radio-isotope Conference is to be held in Oxford from July 19 to 23. On Monday and Tuesday, the 19th and 20th, papers will be given on medical applications of radio-isotopes. Applications for membership should be sent to the secretary of the conference, Atomic Energy Research Establishment, Harwell, Berks, before Feb. 28.

European Congress on Clinical Chemistry

The first European Congress on Clinical Chemistry will be held in Amsterdam from Sept. 23 to 28. The subjects chosen for discussion are: Isotopes in the Clinico-chemical Laboratory, and Physical Methods of Measurement in connection with Clinico-chemical Problems. Further particulars may be had from Dr. I. O. Meulemans, the secretary-general, Racinelaan 17, Utrecht, Netherlands.

British Council Courses, 1954

The twenty-four courses, with places for 650 overseas specialists, which the council is holding this year, will include for the first time courses on plastic surgery (East Grinstead, April 14–16), and the education and rehabilitation of the deaf (Manchester, July 12–24). Other medical courses are on anæsthesia (London, March 14–27) and industrial medicine (Birmingham, May 12–31). Further particulars may be had from the council, 65, Davies Street, London, W.1.

Medical Research Council

Alexander Pigott Wernher Travelling Fellowships in Ophthalmology and Otology.—The council invite applications for these fellowships, which are intended for medical graduates who are likely to profit by a period of work in ophthalmology or otology at a centre abroad before taking up positions for higher teaching and research in these branches of medical science. They are normally tenable for one year. A maintenance allowance at the rate of £650 per annum is offered for a single fellow or £900 per annum for a married fellow; in addition, an allowance is made for travelling and other approved expenses. Further information about these fellowships may be had from the secretary of the council, 38, Old Queen Street, London, S.W.1, with whom applications must be lodged by March 31.

Lady Tata Trust

The trustees of this fund invite applications from investigators of any nationality, working in any country in which it is possible to make payments, for grants, scholarships, or fellowships for research on diseases of the blood, with special reference to leukæmia. In view of the affinity between leukæmia and other forms of neoplastic disease, candidates who wish to undertake research on any aspect of malignant disease which may throw incidental light on the related problem of leukæmia will be eligible.

Grants are made for research expenses or to provide scientific or technical assistants for senior workers. Scholarships (at the rate of £600 per annum) are awarded for the personal remuneration of workers carrying out approved research under suitable direction. In addition, the trustees may award one or more fellowships (£1000 p.a.) to workers with considerable research experience. Further particulars may be had from the secretary of the scientific advisory committee, c/o Medical Research Council, 38, Old Queen Street, London, S.W.1. Applications must be submitted before March 31.

Royal National Orthopædic Hospital, London

Sir Henry Floyd has been appointed chairman of the board of governors of this hospital in place of Mr. Louis Fleischmann, who has resigned.

Keats Shelley Association

At a meeting of this associated to be held at Guy's Hospital, London, S.E.1, on Tuesday, Feb. 23, at 5 P.M., Dr. F. N. Doubleday will speak on the Portraits of John Keats.

Royal Microscopical Society

At a meeting of this society on Wednesday, Feb. 17, at 5.30 P.M., at Tavistock House South, Tavistock Square, London, W.C.1, Dr. R. G. White will speak on Microscopy of Antigens and Antibodies within Tissues by the Use of Fluorescent Antibody.

Royal Institution

On Friday, Feb. 12, Dr. Keith Simpson will deliver a lecture on Science in Crime Detection. On Friday, Feb. 26, Dr. C. H. Andrewes, F.R.S., will deliver a lecture on the Common Cold. Both lectures are at 9 P.M., at the institution, 21, Albemarle Street, London, W.1.

Exhibition on Foot Health

This exhibition, which will include displays on the development of children's feet and shoe construction and fitting, is to be held at the Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W.1, from 10 A.M. to 5 P.M. on Mondays to Fridays and from 10 A.M. to NOON on Saturdays, from Feb. 22 to March 20.

Seminar on World Health

A seminar will be held during the World Health Assembly, at the Palais des Nations, Geneva, from May 3 to 15 to familiarise public-health workers, doctors, and medical students with the work of the World Health Organisation. Further information may be had from the World Federation of United Nations Associations, UNESCO House, 19, Avenue Kléber, Paris, 16e.

CORRIGENDA: *Preservation of Corneal Grafts by Freezing.*—In this article by Mr. Eastcott and his colleagues (Jan. 30, p. 237), the last paragraph under the heading "Results" refers to case 6 (not case 12).

Transfer to Insulin Zinc Suspension.—In the article by Dr. FitzGerald and his colleagues (Jan. 23, p. 187), the results in case 19 (table II) should have been classified as "better" and not as "no change."

Births, Marriages, and Deaths

BIRTHS

BEARN.—On Jan. 24, at New York Hospital, to Margaret (née Slocum), wife of A. G. Bearn, M.D.—a daughter.

Appointments

Manchester Regional Hospital Board:

COLSON, G. M., B.M. Oxfd, M.R.C.P.: consultant physician Bolton and District Hospital Centre.

FALK, SAMUEL, M.D. Manc., D.P.M.: consultant psychiatrist, Bury and Rochdale Hospital Centres.

LAIRD, S. M., M.D. Glasg., F.R.F.P.S., D.P.H.: consultant venereologist and director, St. Luke's Clinic, Manchester, and the venereal diseases clinics of the Manchester Royal Infirmary.

MCCOMB., S. G., M.D. Belf., M.R.C.P.I.: consultant physician (geriatrics), Bolton and district hospitals.

PARKER, LEWIS, B.M. Oxfd: consultant pathologist, North Manchester Hospitals Group Laboratory.

ROWLEY, K. A., M.B. Manc., F.F.R., D.M.R.-D.: consultant radiologist-in-charge, Blackpool and Fylde hospitals.

SAVIDGE, R. S., M.D. Lond., M.R.C.P.: consultant physician, Bury and Rossendale hospitals.

North East Metropolitan Regional Hospital Board:

GIORDANI, ALDOUS, M.R.C.S., D.M.R.-D.: part-time radiologist (consultant), King George Hospital, Ilford.

HACKER, EMERICH, M.R.C.P.E., D.A.: part-time anæsthetist (consultant), St. Andrew's Hospital, and St. George-in-the-East Hospital, London.

LEWIS, J. W., M.B. Lond., D.A.: part-time anæsthetist (consultant), Harts Hospital, Woodford Green, Essex.

MILLAR-DANKS, SHEILA, M.B. Durh., D.A.: part-time anæsthetist (consultant), St. Andrew's Hospital, London.

PREISKEL, ELLA, M.B. Lond., D.M.R.: part-time radiologist (consultant), St. Mary's Hospital, Plaistow, and Forest Gate Hospital.

WILSON-SHARP, C. D., M.D. Lond., D.M.R.-D.: whole-time radiologist (consultant), Colchester group of hospitals.

Diary of the Week

FEB. 7 TO 13

Monday, 8th

UNIVERSITY OF LONDON
5.30 P.M. (University College, Gower Street, W.C.1.) Prof. C. Fromageot (Paris): Metabolism of Sulphur Amino-acids and the Cycle of Sulphur in Nature. (First of three lectures.)

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1
8.30 P.M. Mr. L. N. Pyrah, Dr. C. E. Dent: Recurrent Urinary Stone.

Tuesday, 9th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Dr. D. A. Long: Pathogenesis of Rheumatic Fever. (First of two Milroy lectures.)

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. J. V. Dacie: Congenital Hæmolytic Anæmia.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
5.30 P.M. *Section of Experimental Medicine and Therapeutics.* Dr. R. K. Doig (Melbourne), Dr. A. Turnbull, Dr. J. Badenoch, Dr. D. L. Mollin: Gastric Biopsy and Investigation of Megaloblastic Anæmias.
8 P.M. *Section of Psychiatry.* Dr. A. Walk: Moral Treatment of Insane Before 1854.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Mr. Donald Fraser: Ectopic Gestation.

INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5.30 P.M. Dr. H. J. Wallace: Ano-genital Pruritus.

CHELSEA CLINICAL SOCIETY
8.30 P.M. (South Kensington Hotel, 41, Queen's Gate Terrace, S.W.7.) Dr. John Hunt, Dr. Talbot Rogers, Dr. E. P. Scott: General Practice.

MANCHESTER MEDICAL SOCIETY
5 P.M. (Medical School, University of Manchester.) *Section of Surgery.* Mr. Herbert Haxton: Physics in Surgery.

Wednesday, 10th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Section of Physical Medicine.* Dr. W. S. Tegner: Physical Medicine. (Samuel Hyde lecture.)

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell: Practical Aspects of *Trichophyton rubrum* Infections.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Section of Pathology.* Dr. T. H. Blench: The Law Looks at Medicine.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow, C.3
5 P.M. Prof. Alan Moncrieff: Marasmus. (Finlayson lecture.)

Thursday, 11th

ROYAL COLLEGE OF PHYSICIANS
5 P.M. Dr. Long: Pathogenesis of Rheumatic Fever. (Second of two Milroy lectures.)

UNIVERSITY OF LONDON
5.30 P.M. (Senate House, W.C.1.) Air Marshal Sir Harold Whittingham: Air Transport of Sick and Wounded. (Second of two lectures.)

ROYAL SOCIETY OF MEDICINE
5 P.M. *Section of Ophthalmology.* Prof. R. J. V. Pulvertaft, Dr. C. H. Smith, Mr. J. R. Hudson: Toxoplasmosis.

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Prof. H. B. Maitland: Anti-virus Immunity.

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Sir Harold Himsworth: Current Problems in Medical Research.

INSTITUTE OF CHILD HEALTH, The Hospital for Sick Children, Great Ormond Street, W.C.1
5.30 P.M. Dr. Kenneth Soddy: The Invalid Child.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
5 P.M. Prof. F. C. Ormerod: Malignant Disease of the Œsophagus.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Blood and Bone-marrow in Skin Diseases.

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11, Chandos Street, W.1.) Mr. J. E. M. Ayoub: Mental Reactions to Visual Abnormalities.

NUFFIELD ORTHOPÆDIC CENTRE, Wingfield-Morris Orthopædic Hospital, Oxford
8.30 P.M. Dr. J. F. Brailsford: Manifestations and Complications of Paget's Disease.

Friday, 12th

UNIVERSITY OF LONDON
5 P.M. (University College Hospital Medical School, University Street, W.C.1.) Prof. Andrew Claye: Pain in Labour and its Relief.

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
2 P.M. Mr. D. Innes Williams: Bladder in Congenital Spinal-cord Lesions.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. H. W. Barber: Clinical demonstration.

Saturday, 13th

SOUTH EAST METROPOLITAN REGIONAL TUBERCULOSIS SOCIETY
10.30 A.M. (London School of Hygiene and Tropical Medicine.) Mr. T. Holmes Sellars, Mr. Ronald Edwards, Dr. John Scadding: Place of Resection in Treatment of Pulmonary Tuberculosis.

ASSOCIATION OF CLINICAL BIOCHEMISTS
2.30 P.M. (Department of Zoology, The University, Reading.) Physical Methods in Biochemistry.

Ensuring adequate cough sedation

ETHNINE is a new, palatable, and effective cough sedative containing 4 mg. Pholcodine in each teaspoonful.

The properties of Pholcodine are:—

Less toxic than Codeine.

Higher anti-tussive factor than Codeine.

Less constipating than Morphine or Codeine.

The sedative action of ETHNINE is particularly useful in the treatment of the elderly patient who may suffer from insomnia or exhaustion as a result of intractable nocturnal cough.

ETHNINE

CONTAINING PHOLCODINE

In bottles of 4 and 80 fluid ounces.

Literature on application.

ALLEN & HANBURYS LTD LONDON E 2

TELEPHONE BISHOPSGATE 5201 (20 LINES) TELEGRAMS "GREENBURYS BETH LONDON"

When I'm on duty things are under control

It's useful to have Mr. Therm on duty since there are so many processes he can control automatically for you. Gas-fired equipment is capable of the most accurate self-adjustment and the most rigid control of fuel consumption, while the flexibility of gas makes it adaptable to almost any process requiring heat. These advantages, coupled with its speed, cleanliness and economy, are every day adding to Mr. Therm's popularity.

MR. THERM HELPS DOCTORS AND NURSES

He makes himself very useful in hospitals, clinics and nursing homes in heating, steam raising, water heating, main and ward cooking, sterilising, incinerating refrigerating, laboratory equipment and stand-by lighting.

Mr. Therm burns to serve you

THE GAS COUNCIL · 1 GROSVENOR PLACE · LONDON · S W 1

When convalescents need a pick-me-up

MOUSSEC

may well be the answer

Moussec is a perfect natural sparkling stimulant for cases of mental depression, debility and general apathy. Produced only from specially selected grapes by the entirely natural process of double fermentation and free from fortification by any form of spirit it is purity and goodness itself.

THE BABY BOTTLE (ONE GLASS SIZE) is both adequate and economical. It ensures that the patient gets the benefit of Moussec always in its freshest, most sparkling form.

Baby Moussec is obtainable from all Wine Merchants and Licensed Grocers at 2/3. There are also larger sizes at 4/4, 9/9 and 18/6.

MOUSSEC LTD., RICKMANSWORTH, HERTS.

Instantaneous records with the

COSSOR *direct-writing* ELECTRO-CARDIOGRAPH

MODEL 1314

The most convenient aid in the diagnosis of cardiac conditions, the Cossor Electro-Cardiograph gives a direct visible and permanent record on special sensitized paper, without the complication and delay of photographic development. The calibrated recording paper is supplied in rolls of 150 ft., allowing a continuous run of up to 30 minutes. The instrument is supplied with a Switch Attachment Model 1351 for the selection of Augmented Unipolar Leads. The compact alloy case is of stove-enamel finish with neat zip-fastening showerproof cover. For use on A.C. mains 100/125 and 200/250 volts (50 cycles) or a suitably filtered D.C. rotary converter. A special sprung Trolley Model 1350, finished to match the cream enamel of the instrument, is available for hospital use. Demonstrations can be arranged on request.

A. C. COSSOR LTD., INSTRUMENT DIVISION, DEPT. No. 17, HIGHBURY, LONDON, N.5.

Telephone: CANonbury 1234 (33 *lines*) *Telegrams and Cables: Amplifiers, Norphone, London* *Codes: Bentley's*

C.I 29

Bioglan

VITA-E 75 I.U.

GELUCAPS

(*Vitamin E*)

in the treatment of

Cardiovascular-Renal Diseases

after the method used at the Shute Institute for Clinical and Laboratory Medicine, Canada.

Each Gelucap contains a concentrate of natural esters (d,alpha-tocopherol acetate) from vegetable oils, type VI, equivalent to 75 mgm, d.l. alpha-tocopheryl acetate.

This therapy is today extensively prescribed in the U.K.

Sole Manufacturers:

THE BIOGLAN LABORATORIES LTD., HERTFORD, HERTS.

Tel. Address: "BIOGLAN TOLMERS" *Literature on request* Phone: CUFFLEY 2137

'PABYRN'

preparations for the treatment of the anaemias comprise:—

LIVER

PARENAMPS, total liver for injection.

PROTEOLYSED LIVER ('Pabyrn') for oral use.

HOG'S STOMACH

Antinemin granules; Antinemin liquor.

VITAMIN B_{12}

COBALIN ampoules, 10, 20, 50, 100, 1,000 micrograms.

COBALIN insufflations, 100 micrograms.

Clinical samples and literature on request.

PAINES & BYRNE LTD., Pabyrn Laboratories, Greenford, Middlesex.

POLLERGEN (DUNCAN)

A COMBINED POLLEN EXTRACT

indicated in

● SEASONAL HAY FEVER ● CORYZAL ASTHMA

Researches in Allergy have clearly demonstrated that more success is to be achieved by treatment with a combined pollen extract than with simple extracts of pollen such as Timothy Grass.

Pollergen is a combined extract of those pollens which have proved to be most frequently responsible for the onset of Hay Fever and Hay Asthma, and treatment should be commenced early in the year so as to ensure that maximum dosage is attained before the Pollen Cloud is at its height.

Literature and prices on application

DUNCAN, FLOCKHART & CO. LTD.
EDINBURGH LONDON

The safest and best preparation of opium

Nepenthe contains all the constituents of opium and has been prescribed for over 100 years. It has been found by generations of Practitioners to be the best preparation of Opium as it does not cause the unpleasant after-effects usually attributed to opiates. It can be given over a considerable period and the effect remains invariably constant.

Packed in 2-oz., 4-oz., 8-oz. and 16-oz. bottles, and for injection in ½-oz. rubber-capped bottles, sterile, ready for use.

NEPENTHE Regd.

(FERRIS)

FERRIS & CO LTD

BRISTOL

Telephone 21481 Telegrams FERRIS BRISTOL

She had a really good night Doctor

A patient rests particularly comfortably on an Intalok mattress, yet is firmly supported in a natural position. The unique Intalok spring system makes this possible. Large numbers of fine gauge springs flex gently under 'local' pressure, but, because they are interlinked coil by coil right through the mattress, their combined resilience over larger areas is firm and even. The complete rest Intalok brings makes a real contribution to the patient's recovery.

Here are other good reasons why Intalok is the ideal hospital mattress :

1 All metal parts are rustless —can be sterilized repeatedly.

2 The spring centre gains by repeated stoving.

3 The special Intalok spring system makes the mattress unusually light and easy to handle.

4 Intalok mattresses can be made to special thicknesses or sizes, or in segments to suit special cases.

5 Existing hair mattresses can be converted to Intalok. This cuts costs.

6 Every Intalok springing unit is guaranteed for ten years.

Write for illustrated leaflet and prices.

INTALOK REGD.

THE HOSPITAL MATTRESS

Intalok Ltd., Caldwell Road, Nuneaton

INTALOK IS A PRODUCT OF THE SLUMBERLAND GROUP

SPOONFOODS

Strained and Homogenised Meats, Fruits and Vegetables—in GLASS JARS

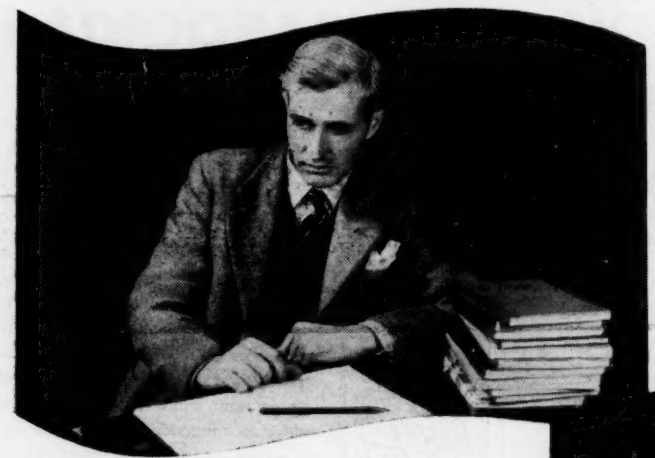
Weaning is always a perplexing process for the mother. *What* to give is comparatively simple. *How* to give it — or more important still how to prepare it — is more difficult because of the small quantities involved and the need for strict hygiene. Spoonfoods are the solution to this problem. Twelve varieties are available and they are packed in convenient quantities in glass jars. The foods are sterilised in the jars and vacuum sealed, so ensuring very high protection from bacterial infection. Because the foods are packed in glass jars, they are likely to overcome the objections which so many mothers have to "tinned foods" for babies.

Full information available from Trufood Limited of Green Bank, London, E.1

TRUFOOD

The Trufood Creameries and Laboratories are at Wrenbury in Cheshire

TFD 76-1785



SMITH'S ON EDGE

"A class of forty demons for five full periods . . . forty exercise books to correct . . . and then a boarding house meal. Of course he's not interested in his food. Hardly to be wondered at if he shows signs of Vitamin Deficiency."

Angiers SUPAVITE CAPSULES REGD.

The increased potency of Supavite is of particular value in such conditions of nervous strain, especially when these are accentuated by vitamin deficiencies in the diet. The combination of Minerals with the Vitamins in Supavite is important as they act together to give the fullest nutritional benefits.

FORMULA

Each *AMBER* Capsule contains:

Vitamin A	6,000 I.U.
Vitamin D	1,000 I.U.
Vitamin E	1 mg. plus one minim wheat germ oil

Each *BLACK* Capsule contains:

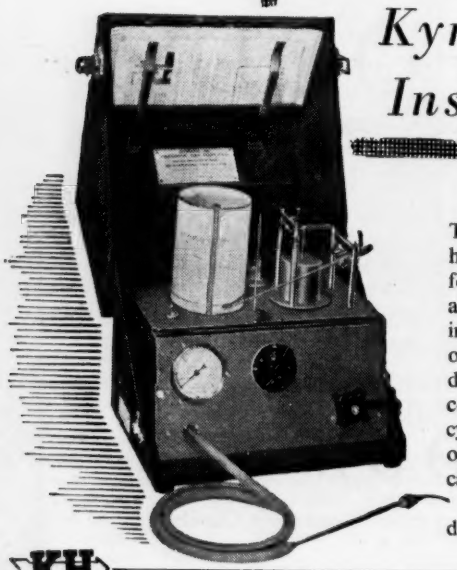
Vitamin B_1	1 mg.
Vitamin B_2 (Riboflavin)	1 mg.
Vitamin C	25 mg.
Nicotinamide ...	10 mg.
Iron (Ferrous)	17 mg.
Calcium	39 mg.
Phosphorus	30 mg.

INDICATED IN CONDITIONS OF VITAMIN DEFICIENCY OFTEN ASSOCIATED WITH: General fatigue and loss of appetite. Nervous debility. Irregular bowel function. Indigestion and general poor health. Mental irritability. Low resistance to colds and other ailments. Changes in the texture of the skin.

THE ANGIER CHEMICAL CO. LTD., LONDON, S.E.1. LABORATORIES—SOUTH RUISLIP, MIDDLESEX

KH 25

The **NEW** *Sharman's Kymographic Tubal Insufflation Apparatus*



This apparatus for recording a graph of insufflation has now been produced in an improved and simplified form. The whole control is now obtained by means of a single 4-position flow control valve instead of the two infinitely variable valves previously fitted. The two rates of flow available for insufflation are accurately pre-set during manufacture. The improved valve design ensures consistent operation over long periods. The CO_2 storage cylinder capacity is sufficient for a large number of operations without changing. Made with traditional care, finished in black leatherette with glossy grey instrument panels and supplied with a spare carbon dioxide cylinder and charts.

KH

KELVIN & HUGHES (INDUSTRIAL) LTD 2, CAXTON STREET, LONDON, S.W.1

110, BOTHWELL STREET, GLASGOW

VALOXYLIN

Trade Mark

Whole liver extract reinforced with vitamin B12

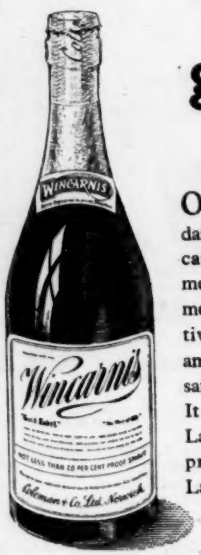
For the treatment of pernicious anaemia with or without neurological manifestations and for those other types of macrocytic anaemia which also respond to liver therapy. For sprue and as a general tonic.

Literature and prices on request.

AN OXOID PRODUCT

OXOID

OXO LTD (Medical Dept.) Thames House, London, E.C.4 Tel. CENtral 9781



a good wine

On the question of whether or not a daily glass of good wine can in many cases be of real benefit to health, medical opinion is by no means unanimous. But those who hold the affirmative view can be sure of this: that among tonic wines none can be more safely recommended than Wincarnis. It is now available in two forms. Gold Label Spanish wine, 28% proof spirit; and Red Label British wine, 26% proof spirit.

WINCARNIS

The trusted tonic wine

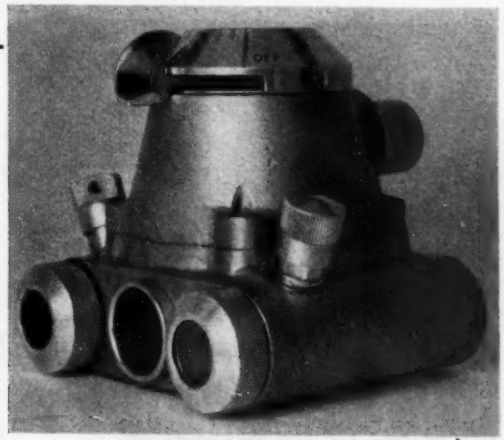
The

BRADFORD VAPOURISER

for

'TRILENE'

for use with Gas-Oxygen apparatus



Made by

CYPRANE LIMITED

Haworth, Keighley, Yorks.

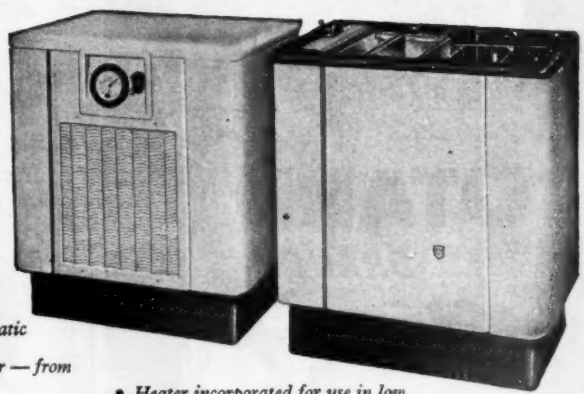
The name 'TRILENE' is the trade mark of Imperial Chemical (Pharmaceuticals) Ltd.

RADIOGRAPHY IN HOT CLIMATES

developing problems ended with this

PHILIPS

REFRIGERATED PROCESSING UNIT



- *Thermostatically controlled — fully automatic in action.*
- *Will cool 20 galls. of water per hour — from 105°F. to 65°F.*
- *Film capacity — 60 per hour.*
- *Films always washed in cooled water.*
- *Separate Tank and Cooler. Cooler can be installed outside dark room.*
- *Heater incorporated for use in low ambient temperatures.*
- *All insulation material insect-proof.*
- *Complete and easy access for inspection.*

ENABLES GOOD RADIOGRAPHY TO YIELD CONSISTENTLY GOOD RADIOGRAPHS

Users commend its performance and reliability

SEND POSTCARD FOR FULL INFORMATION

PHILIPS ELECTRICAL

LIMITED

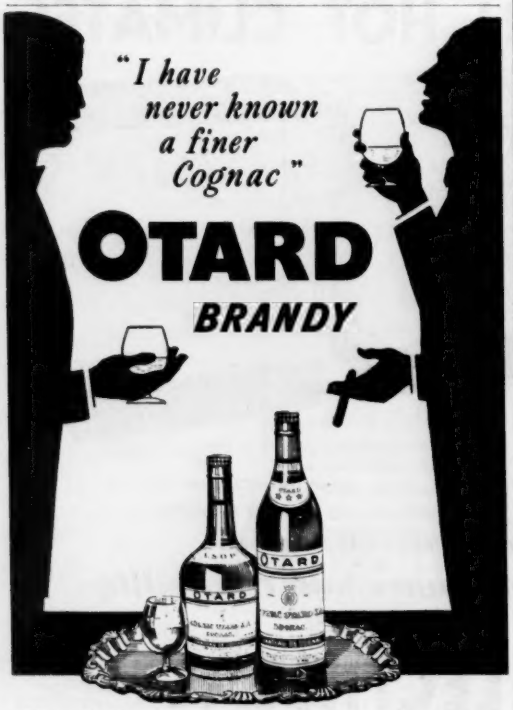
X-RAY DEPARTMENT CENTURY HOUSE SHAFTESBURY AVENUE · LONDON · W.C.2

35 ID962A)

★ Made from the finest Sheffield Steel, Swann-Morton surgical blades are individually tested for keenness and flawlessness—then sterilised and coated with pure Vaseline to reach the surgeon's hands in perfect condition. Handles are of stainless metal, precisely machined to ensure that blades fit accurately and rigidly. There are eleven types of blade, as illustrated, and three types of handle.

Swann-Morton

W. R. SWANN & CO LTD · PENN WORKS · SHEFFIELD · ENGLAND



The only Brandy bottled at the Chateau de Cognac

Famous since 1795

36

FEBRUARY

SHOW A LEG

"Came the dawn". Of all the words—and they must have run into hundreds of thousands—put together by the gifted creatures who wrote the sub-titles in the days of silent films, these three only are remembered. The dawn, when it did come, was generally welcome. The solitary horseman, silhouetted against it, meant that help was on the way; the stockade, a-bristle with the arrows of the Redskins, would be relieved, the cruel thongs which bound the heroine to the permanent way would be severed in the nick of time.

Upon the British in February the impact of dawn is less auspicious. Some people are better at getting up than others, but only a few invite our hostile incredulity by pretending that they like doing it. The daily round, the common task, viewed with half-open eyes from the sanctuary of our pillow, arouse in us a vehement repugnance. Why on earth, we wonder, did *homo sapiens* never take up hibernation?

Yet, somehow, day after day, we survive, by a supreme effort of the will, this test of character, and once we are out of bed, routine, like a conveyor-belt, bears us steadily forward out of oblivion and into the world. The day that dawn has ushered in is unlikely, for most of us, to include any hairbreadth escapes or last-minute rescues; but it will hardly prove as lacklustre as it appeared from our pillow.

Certainly the day will not lack interest at the Midland Bank. Thousands of customers will visit its branches and, when the Bank closes, more than 700,000 cheques will have passed through its hands.

MIDLAND BANK

For professional use

IN THE THEATRE AND IN THE SURGERY

WRIGHT'S

COAL TAR LIQUID **SURGICAL** SOAP

Used in hospitals throughout the country, Wright's Coal Tar Liquid Surgical Soap, containing Coal Tar derivatives and Hexachlorophene, ensures quick destruction of infective agents. Tests prove that, when used for pre-operative "scrub-ups", it will kill most pathogenic organisms in less than half a minute.

Literature and prices on request

WRIGHT'S IS RIGHT!

For personal use

IN THE HOME FOR TOILET, BATH AND NURSERY

WRIGHT'S

COAL TAR **TOILET** SOAP

This fine soap, which the medical and nursing professions find invaluable, justly merits being recommended for everyday use to those whose health is your concern. Its abundant antiseptic lather guards against infection; its pure emollients leave the skin supple and stimulated.

Obtainable from all chemists

WRIGHT LAYMAN & UMNEY LIMITED, 42-50 SOUTHWARK STREET, LONDON S.E.1.

FOUNDATION FOR THE

ACTIVE MAN

The full and active life has no room for ailment; a man's health must be safeguarded without molly-coddling. CHILPRUFE PURE WOOL Underwear is the obvious choice. The soft knitted fabric offers complete protection, plus that sense of freedom and litheness on which comfort depends. CHILPRUFE does not chafe, or become clammy with perspiration; does not restrict; never loses its freshness. Every garment will retain its agreeable smoothness, colour and shape throughout the most strenuous usage.

CHILPRUFE IS PURE WOOL MADE PERFECT

Chilprufe Regd. ***FOR MEN***

Ask your Chilprufe agent or write for illustrated catalogue.

CHILPRUFE LIMITED LEICESTER

The Treatment of

HAY FEVER

by desensitisation with

"BRITISH-GRASS-POLLEN"

The preliminary test indicates degree of sensitivity

May be prescribed on N.H.S. form E.C.10

The Laboratories of ANTIBODY PRODUCTS LTD., WATFORD, HERTS

Phone: Watford 4708

H. K. LEWIS & Co. Ltd.

MEDICAL PUBLISHERS AND BOOKSELLERS

TEXTBOOKS AND WORKS IN MEDICAL, SURGICAL AND GENERAL SCIENCE OF ALL PUBLISHERS

Catalogues on application. Please state interests.

FOREIGN BOOKS: Select stock. Books obtained from abroad under Board of Trade licence.

SECOND-HAND BOOKS: A constantly changing large stock of Medical and Scientific Literature on view, classified under subjects.

MEDICAL STATIONERY: Loose-Leaf Case Books, Card Index Systems, etc.

MEDICAL AND SCIENTIFIC LENDING LIBRARY

Annual Subscription from Twenty-five Shillings Prospectus on application

The Library Catalogue revised to December, 1949, containing a classified Index of Authors and Subjects. Pp. xii + 1152. To subscribers 17s. 6d. net; to non-subscribers 35s. net; postage 1s. 3d.

Supplement 1950–52. To subscribers 3s. net; to non-subscribers 6s. net; postage 6d.

H. K. LEWIS & Co. Ltd., 136 GOWER STREET, LONDON, W.C.1 Phone: EUSton 4282

NUTRITION

in

Post-Pyrexial Cachexia

ST. IVEL (Lactic) CHEESE

is the ideal body-builder and helps to ensure an uneventful convalescence free from nutritional and digestive disturbances.

Communications should be addressed to The Director, Central Laboratory, Aplin & Barrett Ltd., Yeovil, Somerset.

CRAWFORD ADAMS CONCENTRIC HIP MOULDS.

Acrylic

or

Non-toxic stainless steel

DOWN BROS. and MAYER & PHELPS LTD.

Surgical Instrument Makers

92-94, Borough High Street, London, S.E.1

and

32-34, New Cavendish Street, London, W.1

JENNER INSTITUTE Glycerinated VACCINE LYMPH

PREPARED IN ACCORDANCE WITH THE THERAPEUTIC SUBSTANCES REGULATIONS (BRITISH PRODUCT)

Telephone: BATTERSEA 1347

SINGLE VACCINATION TUBES - - - 12/- dozen. Postage extra
LARGE TUBES (EXPORT only) sufficient for 5 vaccinations, 20/- dozen

Telegrams: "JENVACTER, SOUPHONE, LONDON" (2 words)

JENNER INSTITUTE FOR CALF LYMPH LTD., 73, Battersea Church Road, S.W.11

40/-

per cent per annum
COMPOUND

is the reversionary bonus declared for the five years 1949-53 by the Scottish Widows' Fund—a striking addition to the 'Unique Record'.

For particulars of how *you* may become a member of this vigorous profit-sharing Society write to

SCOTTISH WIDOWS' FUND

Head Office: 9 St. Andrew Square, Edinburgh 2

London Offices:

28 Cornhill, E.C.3 17 Waterloo Place, S.W.1

"GERMAN HEALTH RESORTS"

★ Official Handbook of the German Health Resorts Association

★ *and*

★ **"Balneotherapy & Climatotherapy"**

★ a booklet comprising 39 lectures by specialists in hydropathic treatment

★ *will be sent on request, free of charge,*

★ *to members of the medical profession*

★ *A 16 mm. film "Spas in Germany" is available on free loan to medical organisations.*

Specialised brochures on individual spas will be sent on request. For further information on spa treatments and travel facilities, please apply to:

GERMAN TOURIST INFORMATION BUREAU

6, VIGO ST., REGENT ST., LONDON, W.1.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres In the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach
There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

CHEADLE ROYAL CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

The object of this Hospital is to provide the most efficient means for the treatment and care of patients of both sexes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by Trustees. Deep and Modified Insulin Coma; E.C.T., and Psychotherapeutic treatment given. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED.

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone*: **GATLEY 2231**

RUTHIN CASTLE, NORTH WALES

A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

Nursing, dietetic, massage, x-ray and laboratory departments **Central heating and a lift to all floors**

Inclusive charges Apply SECRETARY Telephone: Ruthin 66

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS
NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombieres treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CHISWICK HOUSE
PINNER, MIDDLESEX

Telephone: PINNER 234

A Private Home for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern house, 12 miles from Marble Arch, in attractive secluded grounds. Patients treated under Certificate, Temporary or Voluntary status. Modern forms of treatment, including psychotherapy, narco-analysis, modified insulin, occupational therapy, E.C.T., etc. Fees from 12 guineas a week.

DOUGLAS MACAULAY, M.D., D.P.M.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 6 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL Telephone: Norwich 20080

THE LANCET

Annual Subscription: £2 2 0 per annum

Special reduced rates to Students

Air-mail edition available

Vacancies

	Page
ACADEMIC AND EDUCATIONAL SECTION	42
ANÆSTHETICS	
Highlands, N.21. H.O.	44
Birmingham R.H.B. Reg.	46
Birmingham United Hosps. Sr. H.O.'s & Sr. Reg.	46
Bradford. St. Luke's. H.O.	47
Brighton. Royal Sussex County. Sr. H.O.	47
Chesterfield Royal. Reg.	47
Coventry Group 20 H.M.C. Sr. H.O.	47
Croydon Group H.M.C. Reg.	47
Edinburgh Central Hosps. Jr. H.M.O.	48
Edinburgh Northern Group of Hosps. H.O.	48
Hillingdon, Middx. Sr. Reg.	49
Leeds A Group H.M.C. Sr. H.O.	50
Leeds R.H.B. Sr. Reg.	50
Leeds R.H.B. Locum Regs.	50
Manchester R.H.B. Reg.	51
Manchester United Hosps. H.O. & Sr. H.O.	50/51
Manchester. West Manchester H.M.C. Sr. H.O.	51
Newcastle R.H.B. Locum Cons.	43
Northampton Gen. H.O.	51
North East Met. R.H.B. Regs.	44
Salisbury Group H.M.C. Reg.	52
Scotland. North-Eastern R.H.B. & Univ. of Aberdeen. Cons.	43
Sheffield R.H.B. Locum Cons. or Sr. H.M.O.	43
Sheffield R.H.B. Locum Sr. H.M.O.	44
Sheffield R.H.B. Locum Reg.	53
Stafford H.M.C. Sr. H.O.	53
Stockport & Buxton H.M.C. Sr. H.O.'s	53
York A & Tadcaster H.M.C. Sr. H.O.	55
CASUALTY	
Hackney, E.9. H.O.	44
St. Nicholas, S.E.18. H.O.	45
Birmingham United Hosps. Sr. H.O.	46
Bury St. Edmunds. West Suffolk Gen. Sr. H.O.	46
Coventry Group 20 H.M.C. Sr. H.O. or H.O.	47
Edinburgh Northern Group of Hosps. H.O.	48
Guildford. Royal Surrey County. Sr. H.O.	48
Hastings. Royal East Sussex. Sr. H.O.	49
Hounslow. Middx. Sr. H.O.	49
Liverpool United Hosps. H.O.'s	50
Maidstone. West Kent Gen. Sr. H.O.	51
Manchester. Crumpsall. Sr. H.O.	51
Portsmouth Group H.M.C. Sr. H.O.	52
Salisbury Gen. Sr. H.O.	52
Shrewsbury. Royal Salop Infy. Sr. H.O.	53
Stafford. Staffordshire Gen. Infy. Jr. H.M.O.	53
Swindon Hosp. Group. Sr. H.O.	54
CHEST AND TUBERCULOSIS	
St. Charles', W.10. H.O.	45
Ashford, Middx. Reg.	46
Birmingham (Sanatoria) Group H.M.C. Sr. H.O.	46
Bournemouth & East Dorset H.M.C. Reg.	47
Bradford Royal Infy. Sr. H.O.	47
Braintree. Black Notley. Sr. H.O.	46
Edinburgh Northern Group of Hosps. H.O.'s	48
Maidstone. Preston Hall. Sr. H.O.	51
Manchester R.H.B. Reg.	51
Market Drayton. Cheshire Joint San. Jr. H.M.O. or Sr. H.O.	51
North East Met. R.H.B. Regs.	44
Scotland. Red Cross Sanatoria. Jr. Asst. M.O.'s	52
Sully, Glam. Sr. H.O.'s	53
Ventnor, I.W. Royal Nat. Hosp. for Diseases of Chest. Sr. H.O.	54
Wakefield. Pinderfields Gen. Sr. H.O. or Locum Sr. H.O.	54
DERMATOLOGY	
Willesden Gen., N.W.10. Clin.-Asst. (P.-t.)	45
Glasgow. Southern Gen. Sr. H.O.	49
EAR, NOSE, AND THROAT	
Royal Free, W.C.1. Sr. Reg.	45
Whittington, N.19. Sr. H.O.	45
Birmingham United Hosps. H.O.	46
Dartford H.M.C. Sr. H.O. & H.O.	48
East Cumberland H.M.C. H.O.	48
Isle of Man. P.-t. Vis. Cons.	43
Manchester. West Manchester H.M.C. Pre-reg. H.O.	51
Nottingham Gen. Sr. H.O.	51
Southampton. Royal South Hants & Southampton Gen. Sr. H.O.	53
Wolverhampton H.M.C. H.O.	54
GERIATRICS	
Manchester. Withington. Sr. H.O.	50
INFECTIOUS DISEASES	
Brook Gen., S.E.18. H.O.	44
Eastern (Fevers), E.9. H.O.	44
Bournemouth & East Dorset H.M.C. H.O.	47
Portsmouth Group H.M.C. Sr. H.O.	52
LARYNGOLOGY AND OTOLOGY	
Liverpool United Hosps. Sr. H.O.'s	50
MEDICINE	
Fulham, W.6. Reg.	44
North East Met. R.H.B. Regs.	44

St. Stephen's, S.W.10. Reg. 45
Whipps Cross, E.11. H.O.'s.. .. 45
Bishop's Stortford & Dist. H.O. .. 46
Bishop's Stortford. Haymeads. H.O. 46
Bournemouth. Christchurch. Reg... 47
Cambridge. Addenbrooke's. H.O. .. 47
Doncaster. Royal Infy. Reg. .. 48
Edgware Gen. H.O.'s 48
Edinburgh Northern Group of Hosps. H.O.'s 48
Enfield War Mem. Sr. H.O... .. 48
Grimsby Gen. Pre-reg. H.O... .. 48
Hertford County. H.O. 49
Hillingdon, Middlesex. H.O... .. 49
Huddersfield Royal Infy. H.O. .. 49
Hull. Kingston Gen. H.O. 49
Leeds R.H.B. Locum Regs. 50
Liverpool. Walton. H.O.'s 50
Portsmouth Group H.M.C. Sr. H.O. & Pre-reg. H.O. 52
Redhill. East Surrey. Sr. H.O. .. 52
Scunthorpe War Mem. Sr. H.O. .. 52
Sheffield R.H.B. Sr. H.M.O. .. 43
Sheffield R.H.B. P.-t. Cons... .. 43
St. Albans City. Reg. 53
Swansea. H.O. 54
Swansea. Mount Pleasant. Jr. H.M.O. 54
Tunstall. Burslem, Haywood & Tunstall War Mem. H.O. 54
Weston-super-Mare Gen. H.O. .. 54
Windsor. King Edward VII. P.-t. Hon. Clin. Asst. (G.P.) 54
B.W.I. University College Hosp. H.O.'s 55

NEUROLOGY

Aylesbury. Royal Bucks & Assoc. Hosps. M.C. Sr. H.O. 45
Swansea. Morriston. Sr. H.O. .. 54

NEUROSURGERY

Aylesbury. Royal Bucks & Assoc. Hosps. M.C. Jr. H.M.O. 45

OBSTETRICS AND GYNÆCOLOGY

Camberwell Hosps. M.C. H.O.'s .. 44
Elizabeth Garrett Anderson, N.W.1. H.O. 44
Hosp. for Women, W.1. Sr. H.O. .. 44
Queen Mary's Hosp. for East End, E.15. H.O. 45
University College, W.C.1. Sr. Reg. 45
Aylesbury. Royal Bucks & Assoc. Hosps. M.C. P.-t. Clin. Asst. .. 45
Bedford Gen. Locum Sr. H.O. .. 46
Birmingham. Solihull. Sr. H.O. .. 46
Bournemouth. Royal Victoria. H.O. 47
Brighton. Sussex Maternity. H.O. .. 47
Cambridge Maternity. Sr. H.O. .. 47
Cardiff. St. David's. H.O. 47
Coventry Group 20 H.M.C. Sr. H.O. & H.O. 47
East Cumberland H.M.C. H.O. .. 48
Hillingdon, Middx. H.O. 49
Ilford Maternity. Sr. H.O. 49
Liverpool. Walton. H.O.'s 50
Manchester United Hosps. Reg. .. 50
Plymouth. South Devon & East Cornwall. Sr. H.O... 52
Shrewsbury. Royal Salop Infy. & Copthorne. H.O. 53
Swansea. Mount Pleasant. Sr. H.O. 53
York A & Tadcaster H.M.C. Sr. H.O. 55

OPHTHALMOLOGY

North East Met. R.H.B. P.-t. Cons. & Sr. H.M.O.'s 43
Aylesbury. Royal Bucks & Assoc. Hosps. M.C. H.O. 45
Birmingham & Midland Eye. H.O... 46
Manchester. Royal Eye. Sr. H.O... 51
Oxford United Hosps. H.O. 51
Romford. Oldchurch. Sr. H.O. .. 52
Southampton Eye. Sr. H.O. .. 53

ORTHOPÆDICS

Hammersmith, W.12. H.O... .. 44
Highlands, N.21. H.O. 44
Hosp. for Sick Child., W.C.1. Sr. H.O. 45
St. Charles', W.10. H.O. 45
Birmingham. Royal Orthopædic. Sr. H.O. 46
Birmingham R.H.B. P.-t. Cons. .. 43
Birmingham R.H.B. Reg. 46
Blackburn Royal Infy. Sr. H.O. .. 46
Bournemouth & East Dorset H.M.C. Reg. 47
Bradford Royal Infy. Sr. H.O. & H.O. 47
Braintree. Black Notley. H.O. .. 46
Coventry Group 20 H.M.C. Sr. H.O. 47
Dartford H.M.C. Sr. H.O. 48
East Cumberland H.M.C. Sr. H.O... 48
Edinburgh Northern Group of Hosps. H.O. 48
Gloucester. Gloucestershire Royal. Sr. H.O. 49
Guildford. Royal Surrey County. H.O. 48
Harefield & Northwood Group H.M.C. Reg. 49
Hexham Gen. Sr. H.O. & H.O. .. 49
Leeds. St. James's. Sr. H.O... .. 50
Liverpool United Hosps. H.O.'s .. 50
Manchester R.H.B. Sr. Reg. .. 51
Nottingham Gen. Sr. H.O. 51
Portsmouth Group H.M.C. Sr. H.O. 52
Reading. Royal Berks & Battle Hosps. H.O.'s 52
Sheffield. King Edward VII Orthopædic. Locum Sr. H.O. 53
Southampton. Royal South Hants. Sr. H.O. & H.O. 53
Stockport & Buxton H.M.C. Sr. H.O. 53
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. & H.O. 53
Swansea. Morriston. Sr. H.O. .. 54
Winchester. Royal Hants County. Sr. H.O. 54
Wolverhampton H.M.C. Sr. H.O. or H.O. 54
Yorkshire. East Riding H.M.C. Sr. H.O. 54

PÆDIATRICS

Hosp.for Sick Child., W.C.1. Sr. H.O. 45
Whipps Cross, E.11. H.O. 45
Ashton, Hyde & Glossop H.M.C. H.O. 45
Bradford Child's. H.O. 47
Cheltenham Gen. Eye & Child's. H.O. 47
East Anglian R.H.B. Reg. 48
Edinburgh Northern Group of Hosps. H.O.'s 48
Manchester United Hosps. Reg. .. 50
Reading. Royal Berkshire. H.O. .. 52
Scotland. Northern R.H.B. Reg. .. 52
Sheffield United Hosps. H.O. .. 53
Warwick. H.O. 56
Welsh R.H.B. Reg. 54
Winchester. Royal Hants County. H.O. 54

PATHOLOGY

Central Middlesex, N.W.10. Sr. H.O. & Reg. 44
St. Mary's, W.2. P.-t. Sr. Reg. .. 45
Bishop's Stortford. Haymeads. Sr. H.O. 46
Wolverhampton H.M.C. Jr. H.M.O. 54

PHYSICAL MEDICINE

Harrogate. Royal Bath. Sr. H.O. 49

PSYCHIATRY

North East Met. R.H.B. Reg. .. 44
North Middlesex, N.18. Sr. H.O. .. 44
North West Met. R.H.B. Reg. .. 44
Springfield, S.W.17. Reg. 45
Bristol Clinical Area. Locum Sr. H.M.O. 43
Dundee Mental. Jr. H.M.O. 48
Lancaster. Royal Albert. Sr. H.O. 49
Leeds R.H.B. Locum Regs. 50
Leeds R.H.B. Sr. Regs. 49
Leeds. St. James's. Sr. H.O.... .. 50
Lincoln. Bracebridge Heath. Locum Jr. H.M.O. & Jr. H.M.O. 50
Oxford. Littlemore (Mental). Sr. H.O. 51
Sheffield R.H.B. P.-t. Cons. 43
Yorkshire. East Riding H.M.C. H.O. 54

RADIOLOGY

North West Met. R.H.B. Sr. H.M.O. 43
Birmingham (Dudley Rd.) Group of Hosps. Sr. H.M.O.... 43
Birmingham R.H.B. Cons. 43
Colchester. Essex County. Locum Sr. Reg. 48
Leeds R.H.B. Sr. Reg. 49
Manchester United Hosps. Sr. H.M.O. 43
Manchester United Hosps. Reg. .. 50
Sheffield R.H.B. Sr. Reg. 53
Sheffield United Hosps. Reg. .. 53

RADIOTHERAPY

Hammersmith, W.12. H.O... .. 44

RHEUMATOLOGY

Edinburgh Northern Group of Hosps. H.O. 48

SURGERY

Dulwich, S.E.22. H.O. 44
Highlands, N.21. H.O. 44
London Jewish, E.1. Sr. H.O. & H.O. 44
Nelson, S.W.20. H.O. 44
North East Met. R.H.B. Regs. .. 44
Prince of Wales's Gen., N.15. H.O... 45
Princess Beatrice, S.W.5. Locum Reg. 45
Princess Beatrice, S.W.5. Reg. .. 45
Royal Northern, N.7. Locum Reg... 45
West London, W.6. H.O. 45
Aberystwyth Gen. Pre-reg. H.O. & Sr. H.O. 45
Ashton, Hyde & Glossop H.M.C. Sr. H.O. & Pre-reg. H.O. 45
Barnstaple. North Devon Infy. H.O. 45
Bexhill-on-Sea, Sussex. H.O.'s .. 45
Birmingham Accident Hosp. & Rehab. Centre. H.O.'s 46
Birmingham R.H.B. Reg. 46
Birmingham. Solihull. Sr. H.O. .. 46
Blackburn Royal Infy. Reg... .. 46
Bradford Royal Infy. H.O. 46
Braintree. Black Notley. Sr. H.O... 46
Caerphilly District. Sr. H.O.'s .. 48
Cambridge. Addenbrooke's. H.O. .. 47
Carshalton. St. Helier. Sr. H.O. & H.O. 47
Cheltenham Gen. H.O. 48
Colchester H.M.C. H.O. 48
Coventry Group 20 H.M.C. Jr. H.M.O., H.O.'s & Pre-reg. H.O. 47
Darlington Mem. H.O. 48
Dartford H.M.C. H.O. 48
Dewsbury Gen. Sr. H.O. 48
Dover. Royal Victoria. H.O. .. 48
East Cumberland H.M.C. H.O.'s .. 48
Edinburgh Northern Group of Hosps. H.O.'s 48
Enfield. Chase Farm. H.O... .. 48
Folkestone. Royal Victoria. Sr. H.O. & H.O. 48
Hastings. Royal East Sussex. H.O. 49
Haverfordwest. Pembroke County War Mem. H.O. 49
Hemel Hempstead. West Herts. Pre-reg. H.O. 49
Hexham Gen. Sr. H.O. & H.O. .. 49
Isle of Thanet H.M.C. H.O.'s.. .. 49
Kettering & Dist. Gen. H.O. .. 49
Kidderminster & Dist. Gen. H.O. .. 49
Leeds R.H.B. Locum Regs. 50
Leeds. Seacroft. Sr. H.O. 49
Liverpool. Bootle. H.O. 50
Liverpool United Hosps. Reg. (Temp.) & H.O.'s 50
Liverpool. Walton. H.O. 50
Llanelly. Jr. H.M.O... 50
Maidstone. West Kent Gen. Pre-reg. H.O. 51
Manchester. Booth Hall Child's. H.O. & Sr. H.O.'s 51
Manchester. Crumpsall. Reg. .. 51
Manchester R.H.B. Reg. 51
Manchester. West Manchester H.M.C. H.O. 51
Newton Abbot. S. Devon. Sr. H.O. 51
Nottingham City. H.O. 51
Nottingham Gen. Sr. H.O. 51
Plymouth. South Devon & East Cornwall. H.O.'s 52
Pontefract. Gen. Infy. Sr. H.O. .. 52
Pontypool & Dist. Jr. H.M.O. .. 52
Portsmouth Group H.M.C. Pre-reg. H.O.'s 52
Redhill County. Reg. 51
Romford. Oldchurch. H.O.'s .. 52
Romford. Rush Green. H.O. .. 52
Salisbury Gen. H.O... 52
Scotland. Western R.H.B. Reg. .. 52
Sheffield City Gen. H.O. 53
Sheffield R.H.B. Locum Reg. .. 53
Southport & Dist. H.M.C. Sr. H.O.'s 52
Stockport & Buxton H.M.C. Sr. H.O. & H.O. 53
Stoke-on-Trent. City Gen. H.O.'s.. 53
Stoke-on-Trent. North Staffs Royal Infy. H.O. 53
Swansea. H.O. 54
Taunton & Somerset. Pre-reg. H.O. 54
Tunstall. Burslem, Haywood & Tunstall War Mem. Sr. H.O. .. 54
Watford & Dist. Peace Mem. H.O... 55
Welsh R.H.B. Reg. 54
Weston-super-Mare Gen. H.O. .. 54
Winchester. Royal Hants County. H.O. 54
Wolverhampton H.M.C. H.O. .. 54
Wrexham. Maelor Gen. H.O. .. 54
Yorkshire. East Riding H.M.C. H.O. 54
Channel Islands, Jersey. Gen. R.S.O. 55

UROLOGY

Edinburgh Northern Group of Hosps. H.O. 48

VENEREOLOGY

North West Met. R.H.B. P.-t. Cons... 43

GENERAL

Slough. Upton. Hon. Clin. Asst. .. 52
New York. New Rochelle. Internes 55
New York. Albany. Internships & Residencies 55
St. John's, Newfoundland. Gen. Internes 55

PUBLIC APPOINTMENTS 55
GENERAL PRACTICE 56
NON-MEDICAL 56
MISCELLANEOUS 56

The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

The next EXAMINATION FOR THE MEMBERSHIP will commence on MONDAY, 29TH MARCH, 1954.

Prospective candidates are asked to note that entries accompanied by the certificates, testimonials and the Examination fee of 15 guineas as required by the by-laws, must reach the College not later than first post on Monday, 1st March. Candidates must have been qualified for 18 months.

Candidates who propose to submit published work under the regulations are required to give 28 days notice, and should apply in writing to the Registrar, without delay, for detailed instructions as to the procedure they should follow. Completed entries for published work must also reach the College not later than first post on Monday, 1st March, 1954.

HAROLD BOLDERO, D.M., Registrar.

12, Pall Mall East, London, S.W.1.

FACULTY OF ANÆSTHETISTS

ROYAL COLLEGE OF SURGEONS OF ENGLAND

ANNUAL GENERAL MEETING

The Sixth Annual General Meeting of the Faculty of Anæsthetists will take place at the College at 4 P.M. on WEDNESDAY, 17TH MARCH, 1954. All Fellows and Members of the Faculty are invited to attend.

Notices of Motion must be submitted not less than 10 days before the Meeting. W. F. DAVIS, Secretary.

UNIVERSITY OF LONDON

A LECTURE on "Pain in Labour and its Relief" will be given by Prof. ANDREW M. CLAYE (Leeds) at 5 P.M. on 12TH FEBRUARY at University College Hospital Medical School, University-street, Gower-street, W.C.1.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF MANCHESTER

NUFFIELD DEPARTMENT OF OCCUPATIONAL HEALTH

An INTENSIVE COURSE for Industrial Medical Officers will be held during the period 17TH–28TH MAY, 1954. Admission to the Course will be strictly limited.

Syllabus and application forms may be obtained from the Secretary, Department of Occupational Health, Clinical Sciences Building, York-place, Manchester, 13. All applications should be received not later than 17th April. The fee for the course is £7 7s.

UNIVERSITY OF MANCHESTER

DIPLOMA IN MEDICAL RADIOTHERAPY (R.C.P. AND S. ENG.)

A Course of instruction in Radiotherapy will begin at the Christie Hospital and Holt Radium Institute, Manchester, on MONDAY, 29TH MARCH, 1954. This will continue until the end of JANUARY, 1955, after which students must still spend a further 15 months working either in the Holt Radium Institute or in another approved hospital. Inclusive fee £52.

There are some Junior appointments available at the Christie Hospital under the National Health Service for which successful candidates would be eligible to apply. Special consideration will be given to candidates possessing a higher qualification in medicine or surgery (for whom posts as Registrars may be available). Further information may be obtained from the Director, Holt Radium Institute, Wilmslow-road, Manchester, 20.

Applications must be sent to the Dean of Postgraduate Medical Studies, University of Manchester, not later than Saturday, 27th February, 1954. All applicants will be required to attend for interview.

UNIVERSITY OF ABERDEEN

FORTNIGHT'S GENERAL INTENSIVE REFRESHER COURSE FOR MEDICAL PRACTITIONERS

A Fortnight's Intensive Course, intended mainly for general practitioners, will be held from 17TH TO 29TH MAY, 1954, in the University Medical Buildings, Foresterhill, and the associated hospitals in Aberdeen.

There are schemes for financial assistance whereby the fee for the Course (10 guineas) and the expenses of travelling and of the provision of a locum may, subject to certain conditions, be repaid to doctors engaged in practice under the National Health Service.

Numbers attending the Course will be limited and application should be made by 17th April to the Chairman, Postgraduate Medical Committee, Department of Child Health, University Buildings, Foresterhill, Aberdeen, from whom further information may now be obtained.

INSTITUTE OF BASIC MEDICAL SCIENCES

ROYAL COLLEGE OF SURGEONS OF ENGLAND
BRITISH POSTGRADUATE MEDICAL FEDERATION

LECTURES AND DEMONSTRATIONS IN ANATOMY, APPLIED PHYSIOLOGY AND PATHOLOGY, OCTOBER, 1954–JANUARY, 1955

A full-time Course of Lectures and Demonstrations in the above subjects will be held at the Institute from 4th October, 1954, to 1st January, 1955. Applications for this Course will be strictly limited. Fee—£63.

Closing date for applications is Friday, 2nd April, 1954.

LECTURES IN ANATOMY, APPLIED PHYSIOLOGY AND PATHOLOGY OCTOBER, 1954–JANUARY, 1955

A course of Lectures only in the above subjects will be held at the Institute from 4th October, 1954, to 1st January, 1955. The Lectures will be held in the mornings from MONDAY to FRIDAY each week. Fee—£36 15s.

Full information of and application forms for these courses may be obtained from Mr. W. F. DAVIS, Secretary, Institute of Basic Medical Sciences, Royal College of Surgeons of England, Lincoln's Inn-fields, London, W.C.2 (HOLborn 3474).

UNIVERSITY OF DURHAM

THE MEDICAL SCHOOL, KING'S COLLEGE, NEWCASTLE UPON TYNE

A PART-TIME COURSE for the C.P.H. and D.P.H. will commence in OCTOBER, 1954, occupying 2 terms for the C.P.H. and a further 3 terms for the D.P.H. Students will be required to spend approximately 2½ days a week in each term in whole-time study, leaving the remainder of the time free for remunerated employment. Candidates holding part-time appointments or who have held whole-time appointments in the Public Health Service may be granted exemption from some of the practical instruction.

Candidates wishing to apply for entry to the course commencing next October should write as soon as possible to the Dean of Medicine, the Medical School, King's College, Newcastle upon Tyne. G. R. HANSON, Registrar of King's College.

THE ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE

THE CERTIFICATE, AND THE DIPLOMA, IN PUBLIC HEALTH, AND THE DIPLOMA IN INDUSTRIAL HEALTH

The next bi-annual Course of Instruction for the Certificate in Public Health (C.P.H.) will commence on 19TH MARCH, 1954. This leads to Courses both for the Diploma in Public Health and for the Diploma in Industrial Health. All Courses may be taken either whole-time or part-time.

Prospectuses, enrolment forms, and full details may be obtained from the Secretary, 28, Portland-place, London, W.1 (Telephone: LANgham 2731–2).

BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

Notice is hereby given that an election of Junior Fellows to begin work on 1ST OCTOBER next will take place in May, 1954. Junior Fellowships are of the annual value of £630 for 3 years. As a rule, superannuation benefits are provided, to which the successful candidates will be required to contribute 5% of the annual stipend and to which the Trust will make a contribution of 10%. Candidates must have taken a degree in a faculty of a university approved by the Trustees in Her Majesty's Dominions, Protectorates and Mandated Territories, India, Pakistan and the Republic of Ireland, or a medical diploma registrable in the United Kingdom. Elections to Junior Fellowships are rarely made above the age of 35 years.

Applications from candidates must be received not later than 1st April. Candidates must submit evidence that they can be given accommodation in the departments where they propose to work, which must be either in Great Britain or Ireland.

Forms of application and all information may be obtained by letter only, addressed to the Secretary, Beit Memorial Fellowships for Medical Research, The Lister Institute, Chelsea Bridge-road, London, S.W.1. For Overseas Candidates forms of application may be obtained from: the Secretary, South African Medical Council, P.O. Box 205, Pretoria, South Africa; the Director, Commonwealth Office of Education, Box 3879, Sydney, Australia; the Department of Health, Wellington, New Zealand; and the Canadian Medical Association, 184, College-street, Toronto, Canada.

ELMORE MEDICAL RESEARCH STUDENTSHIPS

The Managers of the Frank Edward Elmore Fund will shortly award Studentships for medical research. The Studentships are open to Male graduates of any University in any country, who were born at any place in the British Commonwealth other than in Scotland. Preference will be given to those with an interest in hæmatology. The students appointed will work in the Department of Medicine of the University of Cambridge, under the direction of the Regius Professor of Physic. The salary will be from £400 to £850 a year according to the student's experience, whether he is married or single, and other circumstances. The appointments will be for 2 years in the first instance.

Further information may be obtained from the Regius Professor of Physic, Department of Medicine, University of Cambridge, to whom applications, together with 3 testimonials, a statement of previous appointments, and copies of published papers, should be sent so as to reach him if possible by 20th February, 1954, but later applications will also be considered.

UNIVERSITY OF TORONTO, Canada. Applications are invited for the following posts:—

ASSOCIATE IN NEUROPATHOLOGY, $4000, vacancy 1st July. The applicant would devote full time to neuropathology and should have a satisfactory basic training in general pathology.

JUNIOR FELLOW IN NEUROPATHOLOGY, vacancy 1st July, salary $1500, tenure 1 year.

Communicate with Dr. ERIC A. LINELL, Professor of Neuropathology, University of Toronto.

McGILL UNIVERSITY PSYCHIATRIC TRAINING. The Department of Psychiatry, McGill University, Montreal, has a limited number of openings for training and applications are now being considered. Applicants must have graduated from an acceptable medical school and have had a general internship of 1 year. The 4-year course provides a general basic preparation during the first 2 years. The last 2 years provide special patterns of instruction for those: (*a*) planning to enter the field of general hospital, community or university psychiatry; (*b*) preparing themselves for a career in child psychiatry; (*c*) intending to enter the field of research psychiatry. Credit may be allowed for previous training. Shorter periods of instruction may be arranged, as well as instruction in special fields. Those accepted for training are assigned to 1 of the 7 university teaching areas in Montreal. These positions carry with them board and lodging, plus an honorarium ranging from $25 to $50 a month, which is the basic stipend. In several centres additional emoluments of a further $1800 a year are available provided certain conditions are fulfilled.

Applicants should write to the Chairman of the Department of Psychiatry, McGill University, Montreal, Canada. The opening date for the new session is 1st July, 1954.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for posts of :—

(1) LECTURER IN ANATOMY,
(2) DEMONSTRATOR IN ANATOMY,

to begin duties on 1st April, 1954, or as soon thereafter as possible. Salary scales : Lecturer £700–£100–£1500 ; Demonstrator £600–£25–£650, with F.S.S.U. provision and family allowance. Initial salary according to qualifications and experience.

Applications (4 copies), should reach the Registrar (from whom further particulars may be obtained), not later than 27th February, 1954.

UNIVERSITY OF SYDNEY, Australia. Applications are invited for the position of SENIOR LECTURER IN PATHOLOGY. The salary for a Senior Lecturer will be within the range of £1050–£1300 (Australian) p.a., plus an allowance (£252 males, £191 females), with annual increments of £50. The salary is subject to deductions under the State Superannuation Act. The commencing salary will be fixed according to the qualifications and experience of the successful applicant.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications in Australia and London is 7th March, 1954.

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ASSISTANT RADIOLOGIST required (whole-time) in the Diagnostic Department, Royal Northern Hospital, N.7 (279 Beds) and other hospitals in the Group. Salary scale £1300 (at age 32)–£1750. Hospital may be visited by direct appointment.

Detailed applications, including date of birth and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 4th March, 1954.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment as :—

Part-time CONSULTANT OPHTHALMIC SURGEON, East Ham Memorial Hospital, E.7 (2 sessions a week).

Part-time ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer grade), East Ham School Eye Clinic, E.6 (4 sessions a week).

Part-time ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer grade), St. Mary's Hospital, Colchester (3 sessions a week), and the following County Health Services Clinics (joint appointment).

Clacton-on-Sea (1 session a week).
Harwich (1 session a week).
Halstead (2 sessions a month).
Maldon (3 sessions a month).

Separate applications (6 copies), indicating post concerned and detailing private address, date of birth, qualifications and experience, present appointment(s) (including number of sessions) and grade, and names of 3 referees, should reach the Secretary, 11A, Portland-place, London, W.1, by Saturday, 20th February, 1954.

BIRMINGHAM (DUDLEY ROAD) GROUP OF HOSPITALS. Whole-time ASSISTANT RADIOLOGIST. Salary £1300–£1750 p.a. Duties mainly at Dudley Road Hospital (790 Beds). Diploma in Diagnostic Radiology and wide experience specialty required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 22nd February, 1954.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) **South Worcestershire Group of hospitals**

Part-time CONSULTANT in Orthopædics (5 notional half-days weekly), duties mainly at Worcester Royal Infirmary. Experience specialty and higher qualification required. Successful candidate will be in charge of Group Orthopædic Services.

(*b*) **Mid-Worcestershire Group of hospitals**

Part-time CONSULTANT in Orthopædics (5 notional half-days weekly). Duties mainly at Kidderminster General Hospital (3 notional half-days) and also at All Saints' Hospital, Bromsgrove (2 notional half-days). Experience in specialty and higher qualification required.

(*c*) **Birmingham (Dudley Road) Group of hospitals** (2538 Beds)

Whole-time CONSULTANT RADIOLOGIST ; duties at Dudley Road Hospital and Administrative control of Radiological Services of Hospital Group comprising fully staffed departments at Dudley Road Hospital (900 acute general beds), St. Chad's Hospital (160 acute general beds), Birmingham and Midland Eye Hospital (150 Beds), Ear and Throat Hospital (80 Beds), Marston Green Maternity Hospital (150 Beds). Wide experience both in specialty and organisation of Radiological Services required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 22nd February, 1954

BRISTOL CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited from registered medical practitioners for the appointment of a Locum Tenens SENIOR HOSPITAL MEDICAL OFFICER in Mental Deficiency to the Hortham-Brentry Hospital Group, Bristol. The appointment will be held on a whole-time basis for a period of 6 months in the first instance, subject to 2 weeks notice on either side.

Applications, stating date of birth, qualifications and experience, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8.

ISLE OF MAN. NATIONAL HEALTH SERVICE. Applications are invited for the part-time post of VISITING CONSULTANT EAR, NOSE AND THROAT SURGEON. The post involves regular monthly visits to the Isle of Man and the provision of services for 3 notional half-days at each visit. A further notional half-day is added in respect of time spent in travelling between the United Kingdom and the Isle of Man for each visit. Travelling expenses, and subsistence allowances in accordance with an approved scale are paid by the Board. Remuneration and conditions of service, including superannuation, under the Isle of Man scheme are essentially the same as those for similar posts in the United Kingdom.

Applications should be made on a form obtainable, with any further information desired, from the undersigned, to whom completed forms should be returned not later than 18th February, 1954. Canvassing will disqualify.

G. S. FORSTER, Secretary,
Isle of Man Health Services Board.

3, Harris-terrace, Douglas.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. Whole-time ASSISTANT RADIOLOGIST, to commence as soon as possible. Duties will be divided between Manchester Royal Infirmary and St. Mary's Hospitals for Women and Children, Manchester, under the direction of the Consultant Radiologists. Candidates must possess the D.M.R.D. and must have had wide experience in radiology. Salary scale £1300–£1750 p.a.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 20th February, 1954.

F. J. CABLE, Secretary to the Board of Governors.

NEWCASTLE REGIONAL HOSPITAL BOARD. Neuro-SURGICAL UNIT, NEWCASTLE GENERAL HOSPITAL, and other hospitals in the Region. Locum Tenens CONSULTANT ANÆSTHETIST required immediately for at least 6 months. Salary according to National terms and conditions of service.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, immediately.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. CONSULTANT VENEREOLOGIST required for 3 half-days a week (at present Wednesday afternoon and evening and Friday afternoon) in the V.D. Clinics for Male patients at St. Albans City Hospital, Normandy-road, St. Albans (382 Beds), and Lister Hospital, Hitchin (336 Beds). Hospitals may be visited by direct appointment.

Detailed applications, including date of birth, and names of 3 referees, to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 10th March, 1954.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD AND UNIVERSITY OF ABERDEEN. SENIOR ANÆSTHETIST to the North-Eastern Region (Scotland), LECTURER IN ANÆSTHETICS to the University of Aberdeen. Applications are invited from registered medical practitioners for the above Consultant post to which the terms and conditions of appointment of medical and dental officers in the National Health Service are applicable, and which will be on a part-time or full-time basis as may be arranged. If on a part-time basis the Officer appointed will require to give 8 sessions weekly to the administration of anæsthetics, clinical teaching and to the organisation of anæsthetic services throughout the Region. The appointment, in terms of the National Health Service (Appointment of Medical and Dental Officers) Regulations, 1948, will be made by the Regional Hospital Board after consultation with the University. In order that the Consultant appointed may undertake and direct study and research the University of Aberdeen will accord accommodation and such facilities as may be available in the University Medical Buildings.

Applications, together with the names of 2 referees, should be forwarded by Friday, 5th March, 1954, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT PHYSICIAN required for the Derby No. 1 Hospital Management Committee Group of hospitals, which include the Derbyshire Royal Infirmary and the Derby City Hospital. Candidates should have special experience and interest in neurology.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 13th March, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT ASSISTANT PHYSICIAN to the Lincoln No. 1 Hospital Management Committee Group. The person appointed will have day-to-day care of 42 infectious diseases beds at the Lincoln Isolation and Chest Hospital, but will be mainly occupied with geriatric duties at the St. George's Hospital, Lincoln (102 Beds). Salary £1300–£50–£1750.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 27th February, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum ANÆSTHETIST required from 7th March to 21st March. Duties at Grantham and Lincoln Hospitals. Remuneration at the rate of 31½ guineas or 45 guineas per week according to status.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time or maximum Part-time CONSULTANT CHILDREN'S PSYCHIATRIST required for South Lincolnshire, the work being based upon Lincoln, Boston and Grantham.

Application forms and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 27th February, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time Resident Locum ANÆSTHETIST (Senior Hospital Medical Officer grade) required from 18th February at the Mansfield Hospitals for 1 month in first instance. Remuneration at the rate of 31½ guineas per week with a deduction for residence.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

Hospital Services : Junior Appointments

BROOK GENERAL HOSPITAL, Shooters Hill-road, Woolwich, S.E.18. HOUSE PHYSICIAN (infectious diseases). Appointment for 6 months in first instance. Salary £450 p.a., less £100 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. SENIOR HOUSE OFFICER required in Pathology Department. Opportunity for experience in all branches of clinical pathology and morbid anatomy. The successful candidate will be expected to take a share in the emergency pathological investigations and occasionally to work at other hospitals in the Central Middlesex Group. Appointment for 6 months (in the first instance) from 1st April, 1954.

Applications, with names of 3 referees, to Medical Director by 20th February, 1954.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time RESIDENT PATHOLOGICAL REGISTRAR required. 1 year in first instance. To act as Transfusion Officer, assist the Consultant Hæmatologist and take part in the 24-hour Pathology Service. Vacant 28th April, 1954. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 20th February, 1954.

CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE.

(1) Dulwich Hospital, East Dulwich-grove, London, S.E.22.

(2) St. Giles' Hospital, Camberwell, London, S.E.5.

Applications invited for appointments as HOUSE OFFICERS (duties obstetrics and gynæcology). Salary £350, £400, or £450 a year according to posts held, with deduction at the rate of £100 a year for residence. Recognised pre-registration posts. Vacant from (1) 2nd March, (2) 1st March.

Applications, stating age, qualifications, previous posts (if any) enclosing copy testimonials or names of referees, to the Group Secretary, Dulwich Hospital, East Dulwich-grove, S.E.22.

DULWICH HOSPITAL, East Dulwich-grove, London, S.E.22. CAMBERWELL HOSPITALS MANAGEMENT COMMITTEE. Applications invited for appointment as HOUSE OFFICER (general surgical duties), vacant from 21st February, 1954. Recognised pre-registration post. Salary £350, £400, or £450 a year, according to posts held, less £100 a year for residence.

Applications, stating age, details of qualifications and previous posts if any, enclosing copy testimonials or names of referees, to the Group Secretary, Dulwich Hospital, S.E.22.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of HOUSE SURGEON to Gynæcological Department (recognised for M.R.C.O.G.). Duties to commence 1st April, 1954. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 10th February, 1954.

EASTERN HOSPITAL (Fevers), London, E.9. House OFFICER. Duties may include some work in Chest Unit. There are facilities for postgraduate study for higher qualifications.

Applications, with testimonials, to Group Secretary, Hackney Hospital, E.9, quoting reference EH/HO.

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for appointment as MEDICAL REGISTRAR at above Hospital, vacant 1st April, 1954. Candidates may visit the Hospital by arrangement with the Physician-Superintendent.

Applications (5 copies to be completed) to be submitted by 19th February, 1954, on forms obtainable from the Group Secretary (166), Fulham and Kensington Hospital Management Committee, 5, Collingham-gardens, London, S.W.5.

HOSPITAL FOR WOMEN, Soho-square, W.1 (affiliated to the Middlesex Hospital). Applications are invited for a full-time post of RESIDENT SENIOR GYNÆCOLOGICAL HOUSE OFFICER, vacant on 1st April, 1954. Appointment is for 6 months but the holder can apply for an extension of 6 months. Salary in accordance with the terms laid down for medical and dental staffs, less a deduction of £100 p.a. for residential emoluments. The appointment is recognised for the M.R.C.O.G. examination.

Applications, stating age, nationality, qualifications, and experience, supported by the names and addresses of 3 referees, must reach the undersigned not later than Saturday, 13th February. D. C. EMERY, Secretary.

HACKNEY HOSPITAL, London, E.9. (General—807 Beds.) Applications for the 6 months appointment of CASUALTY OFFICER AND E.N.T. HOUSE SURGEON (House Officer grade), vacant in February, should reach the Group Secretary, Hackney Hospital, E.9, as soon as possible, quoting reference HH/CO.

HIGHLANDS HOSPITAL, Winchmore Hill, N.21. RESIDENT ANÆSTHETIST with casualty and general duties (House Officer) required.

Applications, with copies of 3 testimonials, to Hospital Secretary.

HIGHLANDS HOSPITAL, Winchmore Hill, N.21. (General Hospital—818 Beds.) HOUSE SURGEON required. Preference given to applicants seeking pre-registration posts under Medical Act, 1950.

Applications, with copies of 3 testimonials, to Hospital Secretary.

HIGHLANDS HOSPITAL, Winchmore Hill, N.21. (General Hospital—818 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Preference given to applicants seeking pre-registration posts under Medical Act, 1950.

Applications, with copies of 3 testimonials, to Hospital Secretary.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. HOUSE SURGEON (radiotherapy) required 1st April.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 13th February.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. HOUSE SURGEON (orthopædics) required as soon as possible.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, immediately.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. Applications invited for the post of RESIDENT HOUSE SURGEON, vacant 6th April, 1954. Tenable for 6 months, renewable. Salary £350, £400, or £450 p.a. according to experience, subject to deduction at the rate of £100 for board, lodging, &c. Available as pre-registration appointment.

Applications, with copies of testimonials, to the Secretary at the Hospital.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) Applications invited for the post of RESIDENT SENIOR HOUSE OFFICER (Surgical Department), vacant 1st March, 1954. Salary £670 p.a., is subject to deduction at the rate of £156 p.a. for board, lodging, &c.

Applications, with copies of testimonials, to the Secretary at the Hospital.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. ST. HELIER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (approved pre-registration post), vacant 7th March.

Applications, stating age, qualifications, &c., with the names and addresses of 2 referees, to be sent to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time PSYCHIATRIC REGISTRAR (non-resident) required at Social Psychotherapy Centre, 7, Fellows-road, Hampstead, N.W.3. Appointment for 1 year in first instance. Post now vacant. Successful candidate will be required to undergo training analysis. Training facilities in physical and psychological forms of treatment in Adult and Children's Departments. Clinic may be visited by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 16th February, 1954.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) MEDICAL REGISTRAR (non-resident), Whipps Cross Hospital, E.11.

(2) MEDICAL REGISTRAR (resident or non-resident), Oldchurch Hospital, Romford. Hospital has specialised Units for Neurology, Cardiology and Neurosurgery.

(3) MEDICAL REGISTRAR (resident or non-resident), St. Andrew's Hospital, Bow, E.3.

(4) SURGICAL REGISTRAR (non-resident), Hertford County Hospital, Hertford.

(5) SURGICAL REGISTRAR (resident or non-resident), Haymeads Hospital, Bishop's Stortford, Herts.

(6) SURGICAL REGISTRAR (resident), Connaught Hospital, E.17. Preference given to holders of F.R.C.S. Post recognised for F.R.C.S.

(7) SURGICAL REGISTRAR (resident), St. Mary's Hospital, Plaistow, E.13. Preference given to holders of F.R.C.S.

(8) REGISTRAR in Anæsthetics (resident preferred), Harold Wood Hospital, Essex.

(9) REGISTRAR in Anæsthetics (non-resident), Chase Farm and other hospitals in the Enfield Group. Recognised for D.A. and F.F.A. R.C.S.

(10) REGISTRAR in Psychiatry (resident or non-resident), Severalls Hospital, Colchester.

(11) MEDICAL REGISTRAR (pulmonary tuberculosis), 2 posts (resident), Broomfield Hospital, near Chelmsford, Essex (300 Beds). Some experience of diagnosis and treatment of pulmonary tuberculosis desirable. Both posts offer experience of all forms of modern therapy together with mass radiography and chest clinic services, but duties of 1 involve primarily work with thoracic surgeons.

Appointments subject to review after 1 year.

Separate applications in triplicate, detailing date of birth, qualifications, experience, present appointment, grade and salary, with 3 copies of 2 recent testimonials, to Secretary, 11A, Portland-place, W.1, by 20th February, 1954.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. SENIOR HOUSE OFFICER (resident) for Psychiatric Unit, required. A new Psychiatric Centre, under the direction of Dr. E. B. Strauss has been started at the North Middlesex Hospital. The Centre will be complete from every point of view and includes a small observation ward. The appointment, which offers admirable opportunities for a young physician anxious to specialise in psychological medicine, is for 6 months from 1st April, with possible extension to 1 year. (Locum required from 25th March.)

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital, by 17th February.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) TOTTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE (GROUP 4), The Green, N.15. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON to Orthopædic, Fracture and Traumatic Department, E.N.T. Department, and SENIOR CASUALTY OFFICER (second or third post) for a period of 6 months, now vacant.

Application form from Secretary.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. (101 Beds.) SURGICAL REGISTRAR (Locum Tenens), non-resident. From 24th February, 1954. F.R.C.S. preferred.

Applications to House Governor.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. SURGICAL REGISTRAR (general surgery), non-resident. Whole-time. F.R.C.S. essential.

Application forms from Secretary, St. Luke's Hospital, Sydney-street, Chelsea, S.W.3 (enclose foolscap stamped addressed envelope).

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. OBSTETRIC HOUSE SURGEON required (Male or Female) (House Officer third post) for 6 months commencing 27th February, 1954. The successful candidate will be eligible for appointment as Senior Obstetric Officer (Senior House Officer grade) for the following 6 months.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Hospital Management Committee, Stratford, E.15, by 10th February, 1954.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Locum RESIDENT SURGICAL OFFICER (Registrar grade) required 17th–26th February.

Applications to the Hospital Secretary.

ROYAL FREE HOSPITAL. Applications are invited for the post of SENIOR REGISTRAR to the E.N.T. Department of the Royal Free Hospital. Duties will commence on 1st April, 1954, and the appointment will be for 1 year in the first instance. Applicants should be registered medical practitioners of not more than 10 years standing, and be Fellows of the Royal College of Surgeons.

Applications, together with the names of 3 referees, should be made to the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, London, W.C.1, not later than 22nd February, 1954.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Part-time (8 notional half-days) SENIOR REGISTRAR to the Bacteriology and V.D. Pathology Department. The appointment is for a first period of 12 months, as from 1st April, 1954, and is subject to annual review. The successful candidate will be required to devote the remaining 3 notional half-days to work in the Wright-Fleming Institute, for which he will receive a salary so that his total remuneration is equal to that of a whole-time Senior Registrar.

Applications, stating nationality, date of birth, permanent address, qualifications, with dates and details of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 15th February, 1954.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (593 Beds.) Applications are invited for the undermentioned posts :—

HOUSE SURGEON (orthopædic, and some responsibility for E.N.T. and plastic beds). The post provides good opportunity for varied experience.

HOUSE PHYSICIAN (tuberculosis). The post provides excellent experience in medical and surgical treatment of pulmonary tuberculosis and facilities for investigation of non-tuberculosis pulmonary diseases.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, to be forwarded to the Hospital Secretary by 15th February, 1954.

ST. STEPHEN'S HOSPITAL, Fulham-road, S.W.10. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (non-resident). General and thoracic medicine including cardiology and tuberculosis wards. Vacancy 1st April, 1954.

Forms of application should be obtained from and returned to Group Secretary, St. Luke's Hospital, Sydney-street, S.W.3 (enclose stamped addressed envelope).

ST. NICHOLAS HOSPITAL, Plumstead, London, S.E.18. CASUALTY OFFICER (recognised for F.R.C.S.), vacant now. 6 months appointment. Salary £450 p.a., less £100 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

SPRINGFIELD HOSPITAL, S.W.17. Springfield Hospital MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required. The Hospital is a large one and offers excellent experience in diagnosis and treatment of all forms of mental disorder, including the neuroses. Every variety of modern treatment is carried out in a well-equipped treatment centre. Single accommodation available for which a deduction of £130 p.a. will be made. Candidates may visit the Hospital by arrangement.

Apply to Secretary, Springfield Hospital, Beechcroft-road, Upper Tooting, S.W.17, for application forms which should be returned, duly completed, on or before 20th February, 1954.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies on 15th May, 1954, for the following Senior House Officers.

HOUSE PHYSICIAN.

HOUSE SURGEON, to the Orthopædic and Plastic Departments.

Further particulars and form of application, which must be returned not later than 8th March, 1954, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of RESIDENT ASSISTANT OBSTETRIC SURGEON (graded Senior Registrar). Salary £1000–£1300 p.a., less £100 p.a. for residence. Candidates should be Members of the Royal College of Obstetricians and Gynæcologists.

Applications, with names of 2 referees, to the Administrator and Secretary by 20th February, 1954.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. HOUSE SURGEON (general and genito-urinary) required 1st April.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary by 20th February.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. Applications invited for CLINICAL ASSISTANT to the Dermatological Clinic. 1 session per week. Salary £175 p.a. per half-day.

Application form obtainable from and returnable (with copies of 2 testimonials) to Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 17th February, 1954.

WHIPPS CROSS HOSPITAL, London, E.11. Leyton-STONE (NO. 10) HOSPITAL GROUP. Applications are invited for the undermentioned posts at above Hospital :—

HOUSE PHYSICIANS (first, second, or third posts), 1 now vacant, 1 vacant 1st April, 1954.

HOUSE PHYSICIAN (pædiatrics) second or third post, vacant 1st April, 1954.

Application forms from the Hospital Secretary, to be returned by 18th February.

WHITTINGTON HOSPITAL, N.19. Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T.), now vacant. Unit contains 30 Beds with an active Outpatient Department. Post recognised for the D.L.O.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials and name of 1 referee, to Medical Superintendent, Whittington Hospital, Highgate Hill, N.19, not later than 16th February, 1954.

AYLESBURY. ROYAL BUCKINGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE, AYLESBURY, BUCKS. Applications are invited for the following appointments :—

Royal Buckinghamshire Hospital

HOUSE SURGEON to the Department of Ophthalmology which is centred on this Hospital and which conducts work at peripheral clinics. Vacant now. Post is recognised for D.O. and duties will include some children's surgery.

CLINICAL ASSISTANT (Female) with experience of work in a Birth Control Clinic, to the Department of Obstetrics and Gynæcology. Appointment in the first instance for 1 session fortnightly with remuneration at the rate of £100 p.a.

Applications, with 2 testimonials, to Secretary-Superintendent as soon as possible.

Stoke Mandeville Hospital

SENIOR HOUSE OFFICER in Department of Neurology of the United Oxford Hospitals for duties at Stoke Mandeville Hospital.

JUNIOR HOSPITAL MEDICAL OFFICER for National Spinal Injuries Centre. Neurological or surgical experience desirable.

Applications, with copies of 2 recent testimonials, to the Administrative Officer, Stoke Mandeville Hospital.

ABERYSTWYTH. GENERAL HOSPITAL. (Hospital is recognised for F.R.C.S. examination.) MID-WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident post of SENIOR HOUSE OFFICER at the above Hospital.

Full particulars, stating age, qualifications and experience, should be addressed to—

J. PRICE THOMAS, Secretary,
Mid-Wales Hospital Management Committee,
General Hospital, Aberystwyth.

ABERYSTWYTH. GENERAL HOSPITAL. (Hospital, recognised for F.R.C.S. examination.) MID-WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from newly qualified medical practitioners seeking pre-registration posts under the Medical Act, 1950, for the resident post of HOUSE SURGEON at the above Hospital. Busy General Hospital. Salary on national scale less deduction for board and lodging.

Applications, with 2 testimonials, to the Group Secretary, Mid-Wales Hospital Management Committee, General Hospital, Aberystwyth, immediately.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the following appointments at Ashton-under-Lyne General Hospital (800 Beds) :—

SENIOR HOUSE OFFICER (general surgery), vacant now.

HOUSE SURGEON, vacant now. Recognised for F.R.C.S.(Eng.). Pre-registration post.

HOUSE OFFICER (pædiatrics), vacant now. Recognised for the D.C.H.

Applications, stating age, nationality, qualifications and experience together with copies of 3 testimonials, should be forwarded to the Group Secretary, Astley-road, Stalybridge, Cheshire.

BEXHILL HOSPITAL, Bexhill, Sussex. (62 Beds.) 2 HOUSE SURGEONS. Posts now vacant. A small modern hospital on the South Coast, considerable acute surgical work and busy Outpatient Department, excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BARNSTAPLE. NORTH DEVON INFIRMARY. (110 Beds.) HOUSE SURGEON (not pre-registration). Post vacant immediately.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

ASHFORD HOSPITAL, Ashford, Middlesex. North West METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT REGISTRAR (Male) required at above Hospital, for Tuberculosis Unit of 56 Beds with some outpatient work. Post vacant 1st March or early thereafter. Hospital may be visited by direct appointment with the Medical Director.

Application forms obtainable from, and returnable to, the Secretary, Staines Group Hospital Management Committee, Ashford Hospital, Ashford, Middlesex, by 13th February, 1954.

BEDFORD GENERAL HOSPITAL. (438 Beds.) Locum RESIDENT SENIOR HOUSE OFFICER (gynæcology and obstetrics) required from 21st February to 8th March, 1954 (inclusive). Salary £13 per week.

Applications, stating age, nationality, qualifications, previous appointments, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, by not later than 10th February, 1954.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (289 Beds.) SENIOR HOUSE OFFICER for casualty and orthopædic duties required. Post recognised for F.R.C.S.

Inquiries and applications to Hospital Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. SENIOR HOUSE OFFICER (casualty) required to commence duty on 1st April, 1954. Previous surgical experience essential.

Forms of application may be obtained from the House Governor, and should be returned not later than 27th February, 1954. G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of RESIDENT SENIOR REGISTRAR in Anæsthetics for duties in the Teaching Group of hospitals. The appointment will be for 1 year in the first instance and subject to annual review. The successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the Birmingham Regional Hospital Board in accordance with an arrangement for the interchange of Senior Registrars agreed between the 2 Boards. Candidates must possess the Diploma in Anæsthetics of the Conjoint Examining Board in England or the Diploma of Fellow of the Faculty of Anæsthetists of the Royal College of Surgeons of England.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him not later than 27th February, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the posts of RESIDENT ANÆSTHETISTS (Senior House Officer grade) for duties within the Teaching Group, and resident at the General Hospital or at the Queen Elizabeth Hospital. The posts are tenable for 1 year. The appointments are recognised for the purpose of taking the F.F.A.R.C.S. examination.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him not later than 27th February, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. QUEEN ELIZABETH HOSPITAL. HOUSE SURGEON to E.N.T. Department required for period ending 6th July, 1954. Recognised for pre-registration students but registered medical practitioners may apply.

Forms of application may be obtained from the undersigned.

G. A. PHALP,
Secretary and Principal Administrative Officer,
United Birmingham Hospitals.

Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. ROYAL ORTHOPÆDIC HOSPITAL. Long and short term orthopædic cases (non-traumatic). 338 Beds and extensive Outpatient Services. SENIOR HOUSE OFFICER.

Applications from registered medical practitioners, preferably with previous orthopædic experience, with copies of testimonials, to the Administrator, 80, Broad-street, Birmingham, 15.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry**

Whole-time ORTHOPÆDIC REGISTRAR (36 Beds) at Hospital of St. Cross, Rugby (164 Beds). Experience in specialty desirable. Single accommodation available.

(2) **West Bromwich and District Hospital Group, Edward-street, West Bromwich**

Whole-time REGISTRAR in General Surgery at West Bromwich and District General Hospital. Duties in Casualty Department. Opportunity to deputise for Resident Surgical Officer in general surgery work. Post recognised for F.R.C.S. Experience specialty required. Resident.

(3) **Birmingham Dudley Road Group of Hospitals, Dudley-road, Birmingham, 18**

Whole-time REGISTRAR in Anæsthetics. Duties mainly at Dudley Road Hospital (800 Beds) and Birmingham Eye Hospital (156 Beds). Resident or non-resident appointment.

Application forms from Group Secretaries to be returned before 22nd February, 1954. Candidates may visit hospitals.

BIRMINGHAM. SOLIHULL HOSPITAL, Lode-lane, SOLIHULL.

RESIDENT SURGICAL OFFICER (Senior House Officer). Good experience in general surgery and 5 other Resident Medical staff.

OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON (Senior House Officer grade); post vacant middle February. Some experience in obstetrics or gynæcology desirable but not essential. Post recognised for the Diploma examination.

Applications, stating age, nationality, qualifications and experience, together with copies of testimonials or names of referees, to the Medical Superintendent.

BIRMINGHAM (SANATORIA) GROUP HOSPITAL MANAGEMENT COMMITTEE. YARDLEY GREEN HOSPITAL—THORACIC SURGICAL UNIT. Applications are invited for the post of SENIOR HOUSE OFFICER. The appointment will give broad opportunities for experience in both tuberculous and non-tuberculous thoracic surgery.

Applications, stating age, qualifications, training and experience, together with copies of 3 recent testimonials, should be addressed to the Secretary, Yardley Green Hospital, Birmingham, 9.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, BIRMINGHAM, 3. HOUSE SURGEON required immediately. Appointment is for 6 months but renewable. Hospital carries resident staff of 4 and provides 2-year course of instruction, which is recognised for the Diploma of D.O. (Eng.) and F.R.C.S. (Eng.) in Ophthalmology. Wide experience available in all branches, including surgery.

Applications, stating age, nationality, qualifications, and experience, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILITATION CENTRE, Bath-row, BIRMINGHAM, 15. (215 Beds.) HOUSE SURGEONS (Male or Female). 2 posts vacant in February, 1 post vacant in March. Recognised for F.R.C.S. The appointments will be for a period of 6 months, of which 2 may be spent in the Burns Unit (Medical Research Council). The Hospital is the largest Traumatic Unit in the country, and treats 50,000 new patients each year. Posts are open to registered practitioners and offer ample opportunity for practical experience in the management of all types of injury and teaching by the Consultant staff.

Applications, with copies of recent testimonials or names of 2 referees, to the Administrator.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical, and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for a RESIDENT HOUSE OFFICER (first or second post held). Salary £350–£400 p.a., less £100 p.a. residential emoluments. Appointment to commence as soon as possible.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials or the names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (Midway between London and Cambridge. Main Line from Liverpool Street.) Applications are invited for the following appointments:—

SENIOR HOUSE OFFICER (pathology) to commence 1st April, 1954, for 1 year. Salary £670, less £130 p.a. in respect of resident emoluments.

HOUSE OFFICER (medicine), Male or Female, pre-registration or first or second post, to commence 7th April, 1954, for 6 months. Salary £350–£400, less £100 p.a. in respect of resident emoluments.

Applications, stating qualifications, nationality, age and experience, with copies of recent testimonials or the names of 2 referees, should be sent to the Hospital Secretary.

BLACKBURN ROYAL INFIRMARY. Senior House OFFICER (orthopædics and casualty) required to take up duty February, 1954. This post is recognised for F.R.C.S. and offers wide experience in this specialty in the Outpatient and Casualty Departments and wards of a busy 262-Bedded acute hospital.

Apply to the Secretary, Blackburn and District Hospital Management Committee, Royal Infirmary, Blackburn.

BLACKBURN ROYAL INFIRMARY. (262 acute beds.) SURGICAL REGISTRAR required to take up duty on or about 1st March, 1954. Resident post recognised for F.R.C.S. 99 surgical beds. Visiting staff of 3 Consultant Surgeons.

Application forms from the Secretary, Hospital Management Committee Office, Blackburn Royal Infirmary.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. Applications invited for post of SENIOR HOUSE OFFICER in Pulmonary Tuberculosis. Post tenable for 1 year. The above Hospital has 544 Beds, including general medical and surgical beds and facilities for postgraduate study. Pulmonary Unit contains 200 Beds including special maternity unit and thoracic surgery. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. SENIOR HOUSE OFFICER for Surgical Tuberculosis Department at above Hospital. Recognised for F.R.C.S. Duties mainly concerned with genito-urinary tuberculosis, including 1 day a week at the London Hospital Genito-Urinary Department.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. (544 Beds.) Applications invited for post of HOUSE OFFICER (orthopædic surgery). (First, second, or third post.) Post tenable for 6 months and is recognised under F.R.C.S. regulations. Salary in accordance with the terms of service issued by the Ministry of Health, plus £50 p.a.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRADFORD ROYAL INFIRMARY. House Surgeon (general and urology), vacant 1st March. Salary £350–£450 p.a., less £100 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD ROYAL INFIRMARY.
SENIOR HOUSE SURGEON (Thoracic Unit), vacant now.
SENIOR ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, now vacant.
Salary for either of above posts £670 p.a., less £130 p.a. residential emoluments.
ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER, now vacant. Recognised for pre-registration purposes. Salary £350–£450 p.a., less £100 p.a. residential emoluments.
Applications for all above posts, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. House Officer (anæsthetics), vacant now. Recognised for D.A. and F.F.A. R.C.S. Opportunities for plastic and intrathoracic experience. Salary £350–£450 p.a., less £100 p.a. residential emoluments.
Applications, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRADFORD. CHILDREN'S HOSPITAL. (102 Beds.) HOUSE OFFICER (Female), vacant now. Salary £350–£450 p.a. less £100 p.a. residential emoluments. Recognised for D.C.H.
Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRIGHTON. SUSSEX MATERNITY HOSPITAL. (62 Beds.) HOUSE SURGEON for a period of 6 months commencing early March. Recognised for the D.Obst.R.C.O.G. Pre-registration candidates may apply.
Applications, stating age, qualifications, experience and nationality, with copies of recent testimonials, to the Administrative Officer, Sussex Maternity Hospital, Buckingham-road, Brighton, by 16th February, 1954.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) RESIDENT ANÆSTHETIST (Senior House Officer grade) required at the above Hospital, vacant 1st March. Recognised for F.F.A.R.C.S.
Applications, stating age, qualifications and experience, with names and addresses of 2 referees, to the Administrative Officer.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (492 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT OBSTETRIC OFFICER, vacant 4th March. The appointment is recognised for the F.R.C.S. examination and for the Diploma in Obstetrics. Salary £350–£450 p.a.
Applications to the Deputy Hospital Secretary, Roya Victoria Hospital, Shelley-road Bournemouth.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Orthopædic Surgery for the above Hospital Group consisting of 18 hospitals with 1548 Beds. The orthopædic work is conducted mainly at the 2 major hospitals of the Group, viz., Royal Victoria Hospital, Bournemouth, and Poole General Hospital, with 100 orthopædic beds and large Outpatient Departments covering both traumatic and non-traumatic orthopædics in all branches in children and adults.
Forms of application, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Bournemouth, should be returned to him, duly completed, within 14 days of the appearance of this advertisement.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. POOLE GENERAL AND ALDERNEY I.D. HOSPITALS, POOLE, DORSET. HOUSE PHYSICIAN required 29th March, 1954, for duties at the above Hospitals. Resident at the Alderney Hospital.
Applications to the Hospital Secretary at the Poole General Hospital.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Thoracic Surgery for duties at the Thoracic Surgical Unit at the Royal Victoria Hospital, Bournemouth (492 Beds). The post becomes vacant on 24th April, 1954. The unit provides full facilities for the surgical treatment of tuberculous and non-tuberculous cases. In addition, the holder of this post normally takes a share in certain of the general surgical work of the Hospital, which takes cases from Bournemouth and parts of Hampshire and Dorset.
Forms of application, obtainable from the Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Bournemouth, should be returned to him, duly completed, within 14 days of the appearance of this advertisement.

BOURNEMOUTH. CHRISTCHURCH HOSPITAL, CHRISTCHURCH, HANTS. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of MEDICAL REGISTRAR at the above Hospital of 290 Beds (including 60 acute medical, chest and chronic sick beds). Applicants must be registered medical practitioners, and the possession of a higher qualification will be considered an advantage. The post becomes vacant on 28th February, 1954, and is tenable for 1 year in the first instance. Duties will include outpatient work at the Royal Victoria Hospital, Bournemouth.
Forms of application, obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, Bournemouth, should be returned to him, duly completed, within 14 days of the appearance of this advertisement.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 17th April. Recognised Pre-registration Service.
Apply, stating age, nationality, qualifications, and experience with dates, and copies of 3 testimonials, to Secretary by 20th February. Interviews 25th February.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House OFFICER to Departments of Dermatology, Ophthalmology and Pædiatrics for 6 months from 11th April, 1954. Recognised Pre-registration Service.
Apply, stating age, nationality, qualifications, and experience with dates, and copies of 3 testimonials, to Secretary by 20th February. Interviews 2nd March.

CAMBRIDGE. MATERNITY HOSPITAL. Senior House OFFICER, from 1st April, 1954, for 1 year. Some previous obstetrical experience essential. Recognised as an obstetrical appointment for M.R.C.O.G. and D.Obst.R.C.O.G. examinations.
Apply, stating age, nationality, qualifications, and experience with dates, and copies of 3 testimonials, to Secretary, United Cambridge Hospitals, Addenbrooke's Hospital, Cambridge, by 20th February. Interviews 5th March.

CARDIFF. ST. DAVID'S HOSPITAL. (656 Beds.) CARDIFF HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER (obstetrics) required in Maternity Department (118 Beds) commencing 9th March, 1954.
Apply in writing to Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

COVENTRY GROUP 20 HOSPITAL MANAGEMENT COMMITTEE invites applications for the following posts :—

Coventry and Warwickshire Hospital (346 Beds)
SENIOR HOUSE OFFICER or HOUSE OFFICER (pre-registration). Fracture and Orthopædic for Casualty duties. Vacant now. Recognised for F.R.C.S.
HOUSE OFFICER (Obstetric Department), vacant 20th March. Recognised for D.Obst.R.C.O.G.

Coventry Hospitals
RESIDENT SENIOR HOUSE OFFICER in Anæsthetics, vacant now. Salary £670 p.a. Recognised for F.F.A. R.C.S. Excellent experience in all types of general anæsthetics. Duties at Coventry and Warwickshire and Gulson Hospitals.

George Eliot Hospital, Nuneaton (289 Beds)
HOUSE SURGEON (general) (54 Beds) required 12th March. No casualty duties. Pre-registration post.
SENIOR HOUSE OFFICER (Obstetric and Gynæcological Department), vacant 28th February. Recognised for D.Obst.R.C.O.G. (37 obstetric beds, 20 gynæcological beds). Experience in specialty desirable.

Manor Hospital, Nuneaton (139 Beds) (Orthopædic Unit of 60 Beds)
HOUSE SURGEON (general including E.N.T. and ophthalmic). Recognised for F.R.C.S. and pre-registration.
RECEIVING ROOM OFFICER required immediately. Recognised for F.R.C.S. Salary scale £700–£1000 p.a.
SENIOR HOUSE OFFICER (traumatic and orthopædic), required. Recognised for F.R.C.S. Salary £670. Vacant 23rd February. Furnished flat available.

Rugby, Hospital of St. Cross (164 Beds)
HOUSE SURGEON (General and Orthopædic Department), vacant now. Recognised for F.R.C.S. and pre-registration.
Applications to Secretary, Group 20 Hospital Management Committee, Stoney Stanton-road, Coventry.

CROYDON GROUP HOSPITAL MANAGEMENT COM-MITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT ANÆSTHETIC REGISTRAR (whole-time) for Group duties mainly at Croydon General Hospital (200 Beds), commencing 1st March. Candidates must have experience in anæsthetics and possession of D.A. an advantage.
Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned not later than 15th February.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. ST. HELIER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE SURGEON (Senior House Officer) to 1 of the 2 general surgical units comprising 70 Beds. Vacant early March.
Applications, stating age, qualifications and experience, with copies of recent testimonials and the name of 1 referee, should be sent to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. ST. HELIER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered and provisionally registered medical practitioners for the post of HOUSE SURGEON, vacant middle of March.
Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, and the names of 2 referees, should be sent as soon as possible to the Group Secretary at the above address.

AMENDED ADVERTISEMENT

CHESTERFIELD ROYAL HOSPITAL. (324 Beds. Recognised for the D.A. and F.F.A.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) with duties when required at Scarsdale Hospital and Walton Hospital. Experience in all types of anæsthesia, except neurosurgery, can be obtained in this Group of hospitals. Appointment for 1 year in first instance.
Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th February, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

CHELTENHAM GENERAL, EYE AND CHILDREN'S HOSPITAL. CHILDREN'S DEPARTMENT. Applications are invited for the post of RESIDENT MEDICAL OFFICER (House Officer grade) for the Children's Department (50 Beds), vacant early February. The appointment, which is recognised for candidates entering for the D.C.H., offers scope for wide experience in all Departments of Pædiatrics, surgical cases, and attendance at Outpatient Departments at the General Hospital. Previous hospital experience in pædiatrics is desirable. The appointment will be for a period of 6 months in the first instance.
Applications, together with copies of 3 testimonials, should be addressed to S. T. DAVIS, Group Secretary,
General Hospital, Cheltenham.

CHELTENHAM GENERAL HOSPITAL. (220 Beds.) Recognised pre-registration appointment. CHELTENHAM GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of HOUSE SURGEON. Salary at the rate of £350, £400, or £450 p.a., less £100 residential emoluments.

Applications, stating age, qualifications, experience, and enclosing copy testimonials, should be sent to the Secretary, Group Management Committee, General Hospital, Cheltenham.

CAERPHILLY DISTRICT HOSPITAL. (Married quarters available.) 2 SENIOR HOUSE OFFICERS (surgery) required at the above Hospital—6 miles from Cardiff (144 Beds for acute general surgery, orthopædics, E.N.T., ophthalmology and gynæcology; 26 Beds for general medicine, busy Outpatient, Casualty and Pathology Departments).

Apply, with full particulars, to the Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, near Cardiff.

COLCHESTER. ESSEX COUNTY HOSPITAL. Locum SENIOR REGISTRAR in Radiology required. Salary £22 a week.

Applications, with copies of 3 testimonials, should be sent to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. BLACK NOTLEY HOSPITAL, BRAINTREE AND ESSEX COUNTY HOSPITAL, COLCHESTER. Applications invited for post of HOUSE SURGEON. First, second, third or pre-registration post, tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Salary in accordance with the terms of service issued by the Ministry of Health, plus £50 p.a. Recognised under F.R.C.S. regulations.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, 14, Pope's-lane, Colchester, Essex.

DARTFORD HOSPITAL MANAGEMENT COMMITTEE.

SENIOR HOUSE SURGEON (orthopædics and traumatic surgery) at The West Hill Hospital from early March, 1954.
SENIOR HOUSE SURGEON (E.N.T.) at The Southern Hospital from 2nd March, 1954.
*HOUSE SURGEON (general) at Joyce Green Hospital.
HOUSE OFFICER (E.N.T. and ophthalmology) at The Southern Hospital.

*Approved for pre-registration purposes.

Applications, stating age, qualifications, experience, nationality, and the names of 2 referees, for House Officers to the Medical Superintendent of the hospital concerned; and for Senior House Officers to the Group Secretary, The Bow Arrow Hospital, Dartford.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (resident), which post is recognised for the F.R.C.S. (Eng.). Salary in accordance with national scale.

Apply, giving age and references, to the undersigned forthwith. G. W. BECKWITH Group Secretary.

DEWSBURY. THE GENERAL HOSPITAL. (119 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (surgery and casualty). Salary £670 p.a., less deduction for board, lodging, &c.

Applications, stating age, qualifications, details of present and previous appointments, together with the names of 2 referees, should be sent immediately to the Administrative Officer, The General Hospital, Dewsbury, Yorks.

DOVER. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of HOUSE SURGEON at the above Hospital. The post is recognised by the Royal College of Surgeons. Salary £350, £400, or £450 a year according to experience. A deduction of £100 a year will be made for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

DONCASTER. ROYAL INFIRMARY. (330 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 15th February, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DUNDEE MENTAL HOSPITAL, Westgreen, Dundee. (Teaching Hospital for St. Andrews University.) Appointment of JUNIOR HOSPITAL MEDICAL OFFICER. Salary according to national scale. Suitable flat available for married man at appropriate rental. Facilities provided to comply with regulations for D.P.M. of R.M.P.A.

Applications, stating age, nationality, qualifications and experience, with recent testimonials, should be sent to the Physician-Superintendent.

EDINBURGH NORTHERN GROUP OF HOSPITALS. There are vacancies for the following HOUSE OFFICER posts, for the 6 months commencing 1st April, 1954. Salary scale £350–£450 p.a., less £100 for residential emoluments.

Urological Unit—1 Surgeon, Western General Hospital.
Children's Units—1 Surgeon, Western General Hospital; 1 Physician, Leith Hospital.
Medical Units—1 Physician, Western General Hospital; 1 Physician, Eastern General Hospital.
Surgical Units—2 House Officers, 1 Casualty Officer, Western General Hospital; 1 Surgeon, Leith Hospital.
Gastro-enterology Unit—1 Surgeon, Western General Hospital.
Thoracic Unit—2 Surgeons, Eastern General Hospital.
Anæsthetics—1 Resident Anæsthetist, Eastern General Hospital.
Rheumatic Unit—1 Physician, Northern General Hospital.
Orthopædic Unit—1 Surgeon, Northern General Hospital.

Applications to Medical Superintendent, Western General Hospital, Edinburgh, 4.

EDINBURGH CENTRAL HOSPITALS. Applications are invited from registered medical practitioners for the appointment of ANÆSTHETIST (Junior Hospital Medical Officer grade), in above Group. Salary scale £700–£50–£1000 p.a., non-resident. National Health Service conditions. Work, mainly with children, will include some adult general surgery and gynæcology.

Applications, with full details of experience, qualifications and age, and names of 2 referees, to be submitted immediately to the Medical Superintendent, Edinburgh Central Hospitals, 18, Rillbank-terrace, Edinburgh, 9.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. 2 RESIDENT HOUSE PHYSICIANS for above Hospital. Posts vacant 7th and 12th March, 1954. Salary £350–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c. 6 months appointment.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 13th February, 1954. Candidates selected for interview will be notified by 20th February, 1954.

EAST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Appointment of House Officers. Applications are invited for the following appointments:—

Cumberland Infirmary, Carlisle (340 Beds)
*2 HOUSE OFFICERS (general surgery).
1 HOUSE OFFICER (gynæcology and obstetrics).
1 HOUSE OFFICER ("Specials"—E.N.T. and Eyes).
1 SENIOR HOUSE OFFICER (orthopædics).

*Pre-registration candidates are eligible to apply.

Applications, with names of 2 referees, should be forwarded immediately to the Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. PÆDIATRIC REGISTRAR in the Peterborough Area. Main hospital Peterborough Memorial. Duties also at Stamford and Rutland Hospital and North Cambs. Hospital, Wisbech. Post provides wide experience. Appointment for 1 year, renewable for second year.

Detailed applications, including age, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 22nd February, 1954. Candidates invited to visit hospitals concerned by direct arrangement with Hospital Management Committee Secretary, Memorial Hospital, Peterborough.

ENFIELD WAR MEMORIAL HOSPITAL, Chase-side, ENFIELD, MIDDLESEX. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER required for general medical and surgical duties in this acute General Hospital of 61 Beds. 12-month appointment. £135 p.a. deducted for board, lodging, and laundry.

Applications, stating age, nationality, qualifications and experience, with the names and addresses of 2 referees, to the Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, as soon as possible.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON (second or third post; approved pre-registration post), vacant 17th March, 1954. Duties with General Surgical Unit, doing some genito-urinary work. Post recognised by the Royal College of Surgeons. 6 months appointment.

Applications, stating age, qualifications, experience and nationality, with the names of 2 referees or testimonials, to the Secretary, Chase Farm Hospital, Enfield, Middlesex, immediately.

FOLKESTONE. ROYAL VICTORIA HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE SURGEON at the above Hospital. Applicants should have held at least 3 hospital posts. The appointment will be tenable for a year. Salary £670 a year, less a deduction of £150 a year for residential emoluments.

Applications, stating age, qualifications, and the names and addresses of 2 referees, should be made to the Group Secretary, "Ash-Eton." Radnor Park West, Folkestone.

FOLKESTONE. ROYAL VICTORIA HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON at the above Hospital which is recognised for Pre-registration Service. Salary £350, £400, or £450 a year according to experience, less a deduction of £100 a year for residential emoluments. This post is recognised by the Royal College of Surgeons for the F.R.C.S. examination.

Applications, stating age, qualifications, experience, and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN as from 15th April, 1954. Pre-registration post under the Medical Act, 1950. Salary and conditions of service in accordance with national scale.

Applications, with names of 2 referees, to Hospital Secretary Grimsby General Hospital.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) HOUSE SURGEON to Orthopædic and Traumatic Unit. The post is tenable for 6 months from 1st February, is recognised for the F.R.C.S. examination, and is open to pre-registration candidates.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. (232 Beds.) CASUALTY OFFICER required. The post is recognised for the F.R.C.S. and the grading is that of Senior House Officer. 2 Casualty Officers are employed who share the work of the department which is part of the Orthopædic and Traumatic Unit. Regular instruction is given in traumatic surgery and Casualty Officers take part in the work of Fracture Clinics. Post is vacant now.

Application with copies of testimonials to the Hospital Secretary.

GLASGOW, S.W.1. SOUTHERN GENERAL HOSPITAL. SENIOR HOUSE OFFICER in Dermatology. Applicants must be qualified at least 2 years.

Apply immediately to Secretary, Board of Management for Glasgow South-Western Hospitals, 1301, Govan-road, Glasgow, S.W.1, naming 2 referees.

GLOUCESTER. GLOUCESTERSHIRE ROYAL HOSPITAL (GREAT WESTERN ROAD, GLOS.). (315 Beds.) SENIOR HOUSE OFFICER required in the Orthopædic and Traumatic Surgery Department at the above Hospital. Staff: 1 Registrar; 2 Senior House Officers. Unit comprises 75 active beds.

Applications, naming 2 referees, to the Group Secretary, Gloucestershire Royal Hospital, Southgate-street, Gloucester.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON required. Resident, Male or Female. Post vacant now. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic). Post vacant now, is recognised for F.R.C.S. National scale of salary.

Apply to Hospital Administrator.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (151 Beds. Recognised by the Royal College of Surgeons and for Pre-registration Service.) Applications are invited for the post of RESIDENT HOUSE OFFICER (surgical). Salary £350, £400, or £450 p.a., according to experience, plus special grant of £50 p.a., less £100 p.a. for residential emoluments.

Applications, stating age, qualifications, experience, and nationality, with names and addresses of 3 referees, to Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HARROGATE. ROYAL BATH HOSPITAL, Cornwall-road. (145 Beds. A National Hospital for the treatment of rheumatism and allied diseases, which is the centre of rheumatism research for the area.) HARROGATE AND RIPON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER. The Hospital is recognised as having an authorised Physical Medicine Department and time spent in the above post will afford experience in physical medicine and will count towards the qualifying 12 months for the Diploma in Physical Medicine. Salary £670 p.a., subject to a deduction of £140 p.a. in respect of board and lodging. The appointment will be subject to the National Health Service superannuation regulations.

Applications to be forwarded to the Hospital Secretary, Royal Bath Hospital, Harrogate.

HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. ORTHOPÆDIC REGISTRAR (full-time) required to undertake duties in the Harefield and Northwood Group of hospitals, and 3 sessions weekly at St. Vincent's Orthopædic Hospital, Northwood Hills. Accommodation available if required. Hospitals may be visited by appointment.

Application forms obtainable from and returnable to the Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 23rd February, 1954.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. 6 months appointment. Preference given to applicants who have held resident surgical or medical posts in general hospital. Salary at rate of £400 p.a., less £100 for residential emoluments. Duties to commence 1st April, 1954.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HEMEL HEMPSTEAD, HERTS. WEST HERTS HOSPITAL. Pre-registration HOUSE SURGEON. Post vacant 12th February, 1954.

Apply, quoting 2 referees, to the Hospital Secretary.

HEXHAM GENERAL HOSPITAL. Hexham and District HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts:—

SENIOR HOUSE OFFICER (orthopædics).

HOUSE OFFICER (orthopædics).

There are 132 orthopædic beds in the Hospital.

SENIOR HOUSE OFFICER (general surgery).

HOUSE OFFICER (general surgery).

The Senior House Officer posts are tenable for 12 months, and accommodation would be available for single persons. All posts are open to Male or Female candidates, and may be interchanged as between orthopædics and surgery for part of their duration. The Hospital is recognised by the Royal College of Surgeons.

Applications, with names of 3 referees, should be sent as soon as possible to the Group Secretary, General Hospital, Hexham, Northumberland.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. (705 Beds.) SENIOR REGISTRAR (resident or non-resident) required in Department of Anæsthetics at above Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Pield Heath-road, Hillingdon, Middlesex, by 15th February.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. HOUSE SURGEON (resident) for gynæcological duties at above Hospital. Previous gynæcological experience desirable but not essential. Post recognised for M.R.C.O.G.

Apply, stating age, nationality, qualifications, experience, and enclosing copies of not more than 3 testimonials, to Medical Director by 15th February.

HILLINGDON HOSPITAL, near Uxbridge, Middlesex. HOUSE PHYSICIAN (resident) required at above Hospital. Post recognised for M.D. (Lond.) Branch 1 and for pre-registration House Officers.

Apply, stating age, qualifications, nationality and experience, together with copies of not more than 3 recent testimonials, to Medical Director by 15th February.

HOUNSLOW GENERAL HOSPITAL. (81 Beds.) Applications are invited for the appointment of CASUALTY OFFICER (resident). Senior House Officer grade, post now vacant. Salary £670 p.a., less £140 for residence, &c.

Applications, stating age, qualifications, experience, with copies of 3 recent testimonials or names for reference, to Hospital Secretary, Hounslow Hospital, Staines-road, Hounslow, Middlesex.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered or registered medical practitioners for the post of HOUSE PHYSICIAN, duties to commence on 1st March, 1954. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE PHYSICIAN (recognised pre-registration appointment). Salary £350, £400 or £450 according to experience. The post is resident and tenable for 6 months. Vacant 15th March, 1954.

Applications to be forwarded to the Secretary.

ILFORD MATERNITY HOSPITAL, Eastern-avenue, ILFORD. There will be a vacancy for a SENIOR HOUSE OFFICER at the above Hospital on 23rd March, 1954. Salary will be at the rate of £670 p.a., less emoluments. This post is recognised for training for the D.Obst.R.C.O.G.

Applicants should have been registered not less than 1 year and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Deputy Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital, Ilford.

ISLE OF THANET HOSPITAL MANAGEMENT COMMITTEE.

General Hospital, Ramsgate (101 Beds)
HOUSE SURGEON.

General Hospital, Margate (132 Beds)
HOUSE SURGEON.

Approved pre-registration posts. Salary at the rate of £350–£450 p.a., according to experience, less £100 for residential emoluments.

Applications, with copies of testimonials, to Hospital Secretary of appropriate hospital.

KETTERING AND DISTRICT GENERAL HOSPITAL. (171 Beds.) Applications are invited for the post of HOUSE OFFICER (surgical). This post is approved for Pre-registration Service, and now vacant.

Applications, with testimonials, to be sent to the Group Secretary, General Hospital, Kettering, as soon as possible.

KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL. (111 Beds.) HOUSE SURGEON required at the above Hospital. Post vacant now.

Applications, with the names of 3 referees, to the Hospital Secretary.

LANCASTER. ROYAL ALBERT HOSPITAL. The ROYAL ALBERT HOSPITAL MANAGEMENT COMMITTEE invite applications for the residential appointment of SENIOR HOUSE OFFICER at the Royal Albert Hospital (920 Beds for mental defectives). The appointment is open to a single or married officer. Small cottage available for a married officer at a net weekly rent of 10s. 3d. Salary £670 p.a., less the appropriate charge for services supplied.

Applications to the Medical Superintendent.

LEEDS. SEACROFT HOSPITAL, York-road, Leeds. SENIOR HOUSE OFFICER for Children's Surgical and, E.N.T. wards.

Applications to Chief Administrative Officer.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following SENIOR REGISTRAR posts:—

Psychiatry

(*a*) Duties at Meanwood Park Colony, Leeds, and as a Trainee Specialist in Child Psychiatry. Residential accommodation is available at Meanwood Park for a single person. The duties will be allocated to allow 5 sessions in the University of Leeds Department of Psychiatry (Children's Section) which is associated with the Leeds General Infirmary. Candidates must hold the D.P.M. or equivalent qualification.

(*b*) De la Pole Hospital, Willerby, Hull (1000 Beds). This Hospital has a high admission-rate and a separate Neurosis Unit for females. A self-contained flat will be available in the Hospital. It is anticipated that the successful candidate will undertake 2 clinical sessions (which may include research) in association with the Department of Psychiatry of the University of Leeds. Candidates must hold the D.P.M. or equivalent qualification.

Radiology

Duties at hospitals in the Halifax and Huddersfield Groups. Subject to satisfactory progress the successful candidate may be given an opportunity of undertaking a period of advanced training at the General Infirmary, Leeds.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 19th February, 1954.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the appointment of SENIOR REGISTRAR (non-resident) in Anæsthetics for duties mainly in the Hull A Group of hospitals with additional duties as required in the Hull B and East Riding Groups.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 19th February, 1954.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (orthopædics). The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £670 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS, 9. ST. JAMES'S HOSPITAL. Leeds A Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male and Female) for the appointment of SENIOR HOUSE OFFICER (psychiatry). The department consists of emergency admission-wards and units for the treatment of early psychotic and neurotic cases. There is a large outpatient commitment. The Unit is recognised as affording suitable training for the D.P.M. examination and facilities will be provided for attendance at courses for this examination at Leeds University. The appointment will be for a period of 1 year and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £670 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital. The appointment which is recognised for the Diploma in Anæsthetics, will be for a period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £670 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LINCOLN. BRACEBRIDGE HEATH HOSPITAL FOR MENTAL DISEASES. (1290 Beds.) Applications are invited for the appointment of a Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident), Male or Female (married or single). Salary £16 per week. There is residential accommodation available for a single or married officer. There will be scope for learning the use of modern psychiatric methods in the wards. Previous psychiatric experience is not essential. The appointment is subject to the provisions of the National Health Service superannuation regulations.

Applications, with names of 2 referees, should be forwarded as soon as possible to the Medical Superintendent, Bracebridge Heath Hospital, near Lincoln.

LINCOLN. BRACEBRIDGE HEATH HOSPITAL FOR MENTAL DISEASES. (1290 Beds.) Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident), Male or Female (married or single). Salary and terms of service as issued by the Ministry of Health. Commencing salary £700 p.a. rising to £1000 p.a. There is furnished accommodation available for a married Officer, or residential accommodation for a single person. There will be scope for work at outpatient clinics, and in the use of modern psychiatric methods in the wards. Previous psychiatric experience is not essential. The appointment is subject to the provisions of the National Health Service superannuation regulations.

Applications, with names of 3 referees, should be forwarded as soon as possible to the Medical Superintendent, Bracebridge Heath Hospital, near Lincoln.

LIVERPOOL. WALTON HOSPITAL. (1321 Beds.) The following resident posts become vacant on the dates stated :—

1st March, 1954
HOUSE PHYSICIAN (general medicine).
HOUSE SURGEON (gynæcology).
1st April, 1954
HOUSE PHYSICIAN (general medicine).
HOUSE SURGEON (general surgery).
HOUSE SURGEON (gynæcology).

All the above posts are recognised for Pre-registration Service.

Applications, stating age, date of qualification, experience, and copies of 2 recent testimonials, to the Physician-Superintendent, Walton Hospital, Liverpool, 9.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for 2 posts of SENIOR HOUSE OFFICERS in Otorhinolaryngology at the Liverpool Ear, Nose and Throat Infirmary for the period to 30th September, 1954. The successful candidates will be eligible for reappointment for a further period from 1st October, 1954.

Apply by 17th February, 1954, on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for the following House Officer posts for the 6 months commencing 1st March, 1954 :—

David Lewis Northern Hospital
ORTHOPÆDIC HOUSE SURGEON.
Royal Southern Hospital
CASUALTY OFFICER.
Royal Liverpool Children's Hospital
HOUSE SURGEON (City Branch).
HOUSE SURGEON (Heswall Branch).
ORTHOPÆDIC HOUSE SURGEON (City Branch).
JUNIOR CASUALTY OFFICER (City Branch).

All the posts are open to pre-registration and other applicants.

Apply immediately on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL STANLEY HOSPITAL. Applications are invited for a temporary post of REGISTRAR in Surgery for the period to 30th September, 1954. The successful candidate will be eligible to apply for reappointment for the period from 1st October, 1954.

Apply by 17th February on forms obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL, 20. BOOTLE HOSPITAL. House Surgeon (general surgery) required for recognised pre-registration post.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, to Secretary, North Liverpool Hospital Management Committee, Walton Hospital, Liverpool, 9.

LLANELLY HOSPITAL, Llanelly, Carms. Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital, for work in the Surgical Unit.

Applications, stating age, qualifications and experience, should be forwarded to the Hospital Secretary, Llanelly Hospital, Llanelly, Carms.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (resident or non-resident) for work in the Geriatric Department. Post tenable for 6 months, and renewable for a further 6 months. The department is active and offers considerable medical experience and an opportunity to read for higher qualifications.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded to the Group Secretary at the Hospital within 14 days of the appearance of this advertisement.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of REGISTRAR in the Neonatal Unit of Saint Mary's Hospitals (attached to the University Department of Child Health). The post is full-time and resident and vacant immediately. It is preferable but not essential that candidates should hold a higher qualification. Previous experience in pædiatrics essential. The post is tenable for 12 months and the salary is in accordance with the national scale.

Application forms may be obtained from the undersigned and should be completed and returned within 10 days of the appearance of this notice. A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. FIRST ASSISTANT (Registrar grade). There is a vacancy in this grade on 1st March, 1954, and applications are invited from suitable candidates. Salary at national scale. There is an establishment of 4 First Assistants —2 of Senior Registrar grade, and 2 of Registrar grade. Initially the appointment will be for 1 year, renewable normally for a second year. The post is non-resident. The duties include very considerable clinical responsibility for obstetrical and gynæcological cases, including cases dealt with in the "Flying Squad" service. The supervision of House Officers and some teaching of undergraduate medical students are also involved. Candidates must therefore have had full previous experience in obstetrics and gynæcology. A higher qualification is desirable.

Forms of application may be obtained from the undersigned. The closing date is 22nd February, 1954.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. REGISTRAR to the Department of Diagnostic Radiology to commence as soon as possible. Whole-time appointment for 12 months, renewable. Applicants must possess the D.M.R.D. or its equivalent.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 20th February, 1954.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. ANÆSTHETICS HOUSE OFFICER, to commence on 1st May, 1954. The appointment is for 6 months at a salary of £400 or £450 p.a., with a deduction at the rate of £100 p.a. in respect of board and lodging and other services provided. Applicants should have had experience in the specialty.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 17th February, 1954.

G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR RESIDENT ANÆSTHETIST, to commence on 1st May, 1954. The appointment is for 12 months at a salary of £670 p.a., with a deduction at the rate of £130 p.a. for residence. Applicants should have had experience in the specialty.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 17th February, 1954.

G. H. TAYLOR, Secretary.

MANCHESTER ROYAL EYE HOSPITAL. United MANCHESTER HOSPITALS. Applications are invited for SENIOR HOUSE OFFICER post. Salary £670 p.a., less £130 p.a. for residential emoluments.

Application forms may be obtained from H. R. NORTH, General Superintendent.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE.

Park Hospital, Davyhulme (General Hospital—426 Beds)

1 SENIOR HOUSE OFFICER (anæsthetics). Hospital recognised for training for Diploma in Anæsthetics. Post now vacant.

1 HOUSE OFFICER (E.N.T.) (pre-registration). Post now vacant.

Eccles and Patricroft Hospital (General Hospital—72 Beds)

1 HOUSE OFFICER (post-registration post). Additional allowance of £50 p.a. Post now vacant. The work of the Hospital is mainly surgical and there is a busy Outpatient Department.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER. CRUMPSALL HOSPITAL. (1225 Beds.) NORTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of CASUALTY OFFICER (Senior House Officer grade) with duties in Orthopædic Department. The appointment is recognised for the purpose of the F.R.C.S.

Applications, stating age, nationality, qualifications, and dates, present and previous appointments with dates, and the names and addresses of 2 referees, to be sent to the undersigned within 10 days of the appearance of this advertisement.

A. T. SAMPSON, Group Secretary.

Crumpsall Hospital, Manchester, 8.

MANCHESTER. CRUMPSALL HOSPITAL. (Adult General—1225 Beds.) NORTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR (general surgery) at the above Hospital, vacant 7th April, 1954. The post is recognised for the F.R.C.S.

Applications, stating age, nationality, present and previous appointments with dates, also names and addresses of 2 referees, to be sent to the undersigned within 10 days of the appearance of this advertisement. A. T. SAMPSON, Group Secretary.

Crumpsall Hospital, Manchester, 8.

MANCHESTER REGIONAL HOSPITAL BOARD. REGISTRAR in Anæsthetics to the Bolton and District Group of hospitals, with main duties at Bolton Royal Infirmary and Bolton District General Hospital. Recognised for the D.A. and F.F.A. R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, should be sent immediately to the undersigned at the Royal Infirmary, Bolton.

H. P. TRAVIS, Group Secretary,
Bolton and District Hospital Management Committee.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of SENIOR REGISTRAR in Orthopædic Surgery to the Lancaster and Kendal Group of hospitals. This is a transitional post tenable for 1 year, with a possible extension until 31st December, 1955. Applicants must either be in their fourth or subsequent year of training in a Senior Registrar post in orthopædic surgery or have occupied such a post for 3 or more years and vacated it since November, 1950.

Forms of application may be obtained from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, and should be returned, with names of 3 referees, by 24th February, 1954.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in the Board's Non-tuberculous Thoracic Surgery Unit of 48 Beds at Park Hospital, Davyhulme. 1-year appointment, renewable. Post now vacant.

Application forms from Secretary, West Manchester Hospital Management Committee, Park Hospital, Davyhulme, Urmston.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of Whole-time RESIDENT SURGICAL REGISTRAR to the West Manchester Hospital Management Committee. Primarily for duty at Park Hospital, Davyhulme, but with duties at other Group hospitals. Post now vacant. 12 months appointment, subject to renewal.

Forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER, 9. BOOTH HALL CHILDREN'S HOSPITAL. Applications are invited for the following posts :—

HOUSE SURGEON. Recognised pre-registration post. Post vacant now.

RESIDENT SENIOR HOUSE OFFICER (surgical). Post vacant now. Main duties will be in recently opened Burns Unit, but person appointed will take part in general surgical rota.

RESIDENT SENIOR HOUSE OFFICER (surgical). Post vacant now.

National scale and conditions.

Apply, stating age, nationality, and usual relevant particulars to the Medical Superintendent as soon as possible, and enclose copies of 2 recent references.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Immediate vacancy for HOUSE OFFICER (Department of Anæsthetics). Recognised for D.A., and for pre-registration. Appointment to 30th September, 1954, in first instance.

Applications, enclosing copies of 3 testimonials, as soon as possible to S. G. HILL, Superintendent.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months appointment. Post vacant now. Salary at the rate of £350, £400, or £450 according to experience. A deduction at the rate of £100 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (135 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING-ROOM OFFICER. Post vacant February, 1954. Salary £670 a year, with deduction of £150 a year for residential emoluments.

Applications to Administrative Officer at Hospital as soon as possible.

MAIDSTONE. PRESTON HALL HOSPITAL, British LEGION VILLAGE, MAIDSTONE, KENT. Applications are invited for the appointment of SENIOR HOUSE OFFICER. Salary £670 p.a., national scale and conditions. The Sanatorium contains 330 Beds for the treatment of tuberculosis and includes a Major Thoracic Surgical Unit.

Applications, stating age, qualifications, and names of 2 referees, to be sent not later than 28th February, 1954, to—

A. A. HOWICK,
Secretary to the Management Committee.

MARKET DRAYTON (near), SALOP. CHESHIRE JOINT SANATORIUM. (305 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer or Senior House Officer, according to experience). Post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

NEWTON ABBOT HOSPITAL. (General Section—65 Beds.) RESIDENT SENIOR HOUSE SURGEON (Male or Female) required immediately. Married quarters available.

Applications, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, S. Devon.

NOTTINGHAM CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 1st March, 1954. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications, and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER. The post offers exceptional experience in traumatic and orthopædic surgery. Duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary.

NOTTINGHAM GENERAL HOSPITAL. Ear, Nose AND THROAT DEPARTMENT. Applications are invited for the post of SENIOR E.N.T. HOUSE OFFICER at the above Hospital. This appointment is recognised for the D.L.O. and the F.R.C.S. examinations. Terms and conditions of service in accordance with the regulations of the Ministry of Health. Duties to commence as soon as possible. Although the post is normally resident, consideration will be given to any applicant who desires to live out.

Applications, stating age, qualifications, and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Required, SENIOR SURGICAL HOUSE OFFICER for the above Hospital. Duties to commence as soon as possible. If resident £150 deducted for emoluments. Salary and conditions of service in accordance with the published conditions of the Ministry of Health.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

OXFORD. LITTLEMORE (MENTAL) HOSPITAL. Applications invited for the post of SENIOR HOUSE OFFICER. Previous experience as House Surgeon or Physician essential. Previous psychiatric experience unnecessary. The Physician appointed will work primarily in the Insulin Therapy Clinic and with a Senior Consultant at outpatient clinics. There are ample facilities for postgraduate study in a teaching general hospital. Salary £670 p.a.

Apply Physician-Superintendent.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of HOUSE OFFICER (trainee, non-resident) to Oxford Eye Hospital, commencing 1st April, 1954. The successful candidate will, if found suitable, be appointed resident Senior House Officer for 6 months from 1st October, 1954, followed by 6 months as Senior House Officer at the Royal Berkshire Hospital (Ophthalmic Department) and a further 6 months as Senior Resident Officer at Oxford Eye Hospital at salary of £775 p.a.

Applications, stating age, qualifications, and experience, together with the names of 2 referees, to Administrator, Radcliffe Infirmary, Oxford, by 22nd February, 1954.

REDHILL COUNTY HOSPITAL, Earlswood Common, REDHILL, SURREY. (519 staffed beds.) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. SURGICAL REGISTRAR. 193 surgical beds. Married quarters available. Please state if free for locum tenens pending appointment.

Application forms and appointment to visit, from Group Secretary at the above address.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MONMOUTHSHIRE. (115 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (surgical) required 1st March. This is the senior resident post and resident staff consists of 2 House Surgeons, a House Physician and this post. This is a busy acute general hospital with a good Outpatient Department and regular visits from Consultants. Post offers good practical experience in surgery. Salary £700–£50–£1000, less £150 board-residence.

Write, quoting names of 2 referees, to—

T. A. JONES, Group Secretary.

64, Cardiff-road, Newport, Mon.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

Saint Mary's Hospital

SENIOR HOUSE PHYSICIAN, vacant 23rd February, 1954. The duties will be mainly in medical wards that form an Admission Unit for 450 geriatric beds in the Group, a Consultant Physician being in charge of this Unit. In addition, the successful candidate will act as Registrar to 20 acute medical beds in the Hospital.

HOUSE PHYSICIAN, vacant 8th March, 1954. Pre-registration post.

(107 surgical beds) Recognised for F.R.C.S.

SENIOR HOUSE OFFICER (Casualty and Orthopædic Departments), vacant now.

Royal Portsmouth Hospital

SENIOR HOUSE SURGEON (Orthopædic and Casualty Departments), vacant 15th February, 1954.

Queen Alexandra Hospital

(124 surgical beds) Recognised for F.R.C.S.

HOUSE SURGEONS, vacant now. Pre-registration posts.

Infectious Diseases Hospital (310 Beds—Fever and T.B.)

SENIOR HOUSE OFFICER, vacant 1st March, 1954.

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

PONTEFRACT. GENERAL INFIRMARY. Pontefract AND CASTLEFORD HOSPITAL MANAGEMENT COMMITTEE (YORKS). RESIDENT SURGICAL OFFICER required. Graded Senior House Officer. Salary £670. 1 years appointment. Recognised for Fellowship. Offers good scope for practical experience. Vacant 1st March, 1954.

Applications to Secretary, Gt. Northern House, Salter-row Pontefract, Yorks.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. Applications invited from duly qualified and registered medical practitioners for the appointment of RESIDENT OBSTETRICAL OFFICER (Senior House Officer grade), vacant 1st April, 1954. There will be additional duties at the Flete Maternity Home and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had considerable experience in a department of obstetrics and gynæcology. The appointment will be for a period of 12 months and is renewable. Salary £670 p.a. Terms and conditions of service are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination of the College.

Applications, stating age, nationality, qualifications, and experience, together with the names and addresses of 3 referees, should be sent to ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank Road. Applications invited from registered medical practitioners for the appointments of HOUSE SURGEONS, vacancies 13th March, 20th April, 1954, recognised for the Fellowship of the Royal College of Surgeons.

Applications, stating age, nationality, qualifications, and experience, with 3 testimonials, to be sent to the undersigned as soon as possible. ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road, REDHILL. SENIOR HOUSE OFFICER (medical and surgical).

Apply Hospital Secretary.

READING. ROYAL BERKSHIRE (403 Beds) and BATTLE (343 Beds) HOSPITALS. Applications are invited for the posts of 2 RESIDENT HOUSE SURGEONS, Area Accident and Orthopædic Department, vacant 1st March, 1954. Also casualty duties. F.R.C.S. recognised.

Apply stating age, nationality, qualifications with dates, present post, with copy of recent testimonial, to Secretary, Royal Berkshire Hospital.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications invited for joint appointment of JUNIOR HOUSE OFFICER to the Paediatric and E.N.T. Departments, for period of 6 months, vacant 1st March, 1954. Salary within scale £350–£450 p.a., less £100 for board, residence, &c.

Applications should state age, qualifications with dates, nationality and particulars of present post, accompanied by 1 copy recent testimonial, to Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (2) are required in February, 1954, in the General Surgical Unit at the above Hospital. Recognised for F.R.C.S. 6 months appointments. This very active general surgical unit of approximately 100 Beds affords ample opportunity for candidate to obtain first-class tuition and experience.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials or names of 2 referees, should be sent immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER in the Department of Ophthalmology, vacant from 24th February 1954.

Applications, stating age, qualifications, present appointment and experience with dates, together with copies of 2 testimonials of recent date or names of 2 referees, should be sent immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) Applications are invited from registered medical practitioners (Male) for the post of RESIDENT HOUSE OFFICER (general surgery) at the above Hospital, vacant from 1st March, 1954. 6 months appointment. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications, stating age, nationality, qualifications with dates, and experience, together with copies of 2 recent testimonials or names of 2 referees, should be addressed immediately to the Medical Superintendent.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited by the Salisbury Hospital Group for a SECOND REGISTRAR ANÆSTHETIST (resident at Odstock Hospital). The post, which is vacant now, is recognised for the D.A. and F.F.A.R.C.S.

Further details and application forms obtainable from, and should be returned to, the Group Secretary, Odstock Hospital, Salisbury, Wilts, within 14 days of the appearance of this advertisement.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT CASUALTY OFFICER (Senior House Officer) for a period of 12 months. Post vacant now.

Applications, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON for a period of 6 months from 25th March, 1954. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SCOTLAND. RED CROSS SANATORIA OF SCOTLAND. (156 Beds.) Applications are invited for the post of JUNIOR ASSISTANT MEDICAL OFFICER, for which there are 2 vacancies, to the above Sanatoria at a salary of £670 p.a., less a deduction for full residential emoluments. A Thoracic Surgical Unit is situated at the Sanatoria. Experience in general medicine essential and in the treatment of pulmonary tuberculosis desirable.

Apply, giving full particulars of qualifications and experience, together with the names of 2 referees, to the Medical Director, Tor-na-Dee, Milltimber, Aberdeenshire, before 13th February, 1954.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of REGISTRAR in Pædiatrics. The post is non-resident and the main duties are at Raigmore Hospital and the Royal Northern Infirmary, Inverness. Previous experience in pædiatrics is essential and experience in general medicine would be an advantage.

Forms of application and further particulars of the post are obtainable from the undersigned, to whom applications should be submitted by 20th February, 1954.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Surgery based at Glasgow Royal Infirmary, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 2nd March, 1954.

SCUNTHORPE, LINCS. WAR MEMORIAL HOSPITAL. (267 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE PHYSICIAN (Senior House Officer) about mid-March in busy department offering excellent clinical experience.

Applications, naming 2 referees, to Group Secretary.

SLOUGH, BUCKS. UPTON HOSPITAL. Applications are invited from general practitioners for HONORARY CLINICAL ASSISTANT appointments in the specialties of plastic surgery, general medicine, gynæcology and obstetrics, and ophthalmology. Candidates are required to be members of a Medical Protection Society.

Applications to Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 13th February.

SOUTHPORT AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE.

Southport General Infirmary

SENIOR HOUSE OFFICER (Surgeon with casualty duties).

Southport Promenade Hospital

SENIOR HOUSE OFFICER (Surgeon, duties include mainly orthopædic and E.N.T. work).

Above resident posts are tenable for 12 months and will be vacant in February. Salary £670 p.a., less £130 for board, &c.

Apply, with 2 testimonials, to—

T. CROOK, Group Secretary,
Southport and District Hospital Management Committee.
Promenade Hospital, Southport.

SHEFFIELD. KING EDWARD VII ORTHOPÆDIC HOSPITAL. Locum MEDICAL OFFICER required (Male or Female), resident or non-resident. The post would suit applicant interested in children's diseases and would afford time for study. Salary £13 per week, less deduction if residential emoluments are provided.

Applications, stating age, qualifications, together with names of 2 referees, to Group Secretary, Sheffield No. 3 Hospital Management Committee Lodge Moor Hospital, Sheffield, 10.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following posts :—

(*a*) NON-RESIDENT REGISTRAR to the Department of Radiology at the Royal Hospital/Royal Infirmary Units. Applications should be sent at once.

(*b*) RESIDENT HOUSE PHYSICIAN to the Professorial Unit at the Children's Hospital. Post vacant 28th March. Closing date for applications 15th February.

Applications for the posts stating age, qualifications and experience, with the names of 3 referees (or copy testimonials for post (*b*)) should be sent as follows : for post (*a*) The Chief Administrative Officer, The United Sheffield Hospitals, Weststreet, Sheffield, 1, and for post (*b*) The Superintendent, Children's Hospital, Western Bank, Sheffield, 10.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time SENIOR REGISTRAR in Radiology for the Leicester Royal Infirmary. Appointment for 1 year in first instance, reviewable annually. It has been agreed between Sheffield Regional Hospital Board and the Board of Governors of the United Sheffield Hospitals that the tenure of the appointment will be divided between the Leicester Royal Infirmary and the Teaching Hospitals.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, to arrive not later than 22nd February, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time Resident Locum SURGICAL REGISTRAR required immediately at the Montagu Hospital, Mexborough. Remuneration at the rate of £16 per week with a deduction for residence.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time Locum REGISTRAR (anæsthetics) required immediately at the Moorgate General Hospital, Rotherham. Remuneration at the rate of £16 per week with a deduction if resident.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD. CITY GENERAL HOSPITAL. (Recognised for F.R.C.S. England.) Applications are invited for the resident appointment of HOUSE SURGEON (general surgery) (recognised pre-registration post), vacant 22nd February, 1954.

Applications, giving full details of age, nationality, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, should be forwarded to W. STANSFIELD, at Nether Edge Hospital, Sheffield, 11.

SHREWSBURY. ROYAL SALOP INFIRMARY AND COPTHORNE HOSPITAL. (500 Beds.) SHREWSBURY GROUP 15 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of GYNÆCOLOGICAL HOUSE SURGEON (Male or Female). There are 50 gynæcological beds and 2 House Surgeons. The post is recognised for the M.R.C.O.G.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Group Secretary.

Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY GROUP 15 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners (Male or Female), for the appointment of CASUALTY OFFICER (Senior House Officer grade), resident or non-resident ; duties to be from 9 A.M. to 6 P.M. each day except Saturday, which should be 9 A.M. to 1 P.M., and the applicant may be required to do 1 week-end duty in 3. The post is recognised for 6 months by the Royal College of Surgeons.

Applications, stating age, qualifications, nationality and experience, accompanied by copy testimonials, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Group Secretary.

Royal Salop Infirmary, Shrewsbury, 1st February, 1954.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER SENIOR HOUSE OFFICER (orthopædic) required for the above Hospital (Orthopædic Unit 74 Beds). This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Post recognised for Pre-registration Service and tenable for 6 months. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions ; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (278 Beds) and SOUTHAMPTON GENERAL HOSPITAL (471 Beds). SENIOR HOUSE OFFICER (E.N.T.) required as soon as possible. Post recognised for the F.R.C.S. (Eng.) and D.L.O. examinations and provides experience in all branches of E.N.T. work, including audiometry. The Group includes a diagnostic and distributing Hearing Aid Centre.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for the D.O.M.S.) RESIDENT SENIOR HOUSE OFFICER required immediately. Salary £670 p.a.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

ST. ALBANS CITY HOSPITAL. (382 Beds.) North West METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR (non-resident) required for 1 of 2 Acute General Medical teams at above Hospital. Post suitable M.R.C.P. training. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to Group Secretary, St. Albans City Hospital, Normandy-road, St. Albans, Herts, by 12th February, 1954.

STAFFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics), Male or Female. Recognised for D.A. Post now vacant. Duties mainly at General Infirmary, Stafford (175 Beds), which is the main and acute general hospital of the Group.

Applications, with copies of 3 testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds.) STAFFORD HOSPITAL MANAGEMENT COMMITTEE. RESIDENT CASUALTY OFFICER (Junior Hospital Medical Officer status) required. Male or Female.

Applications, giving particulars of age, previous experience and copies of 2 recent testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STOCKPORT AND BUXTON HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited for the posts of :—

SENIOR HOUSE OFFICER (orthopædics) to the above Group. The post is non-resident.

2 SENIOR HOUSE OFFICERS (anæsthetics). 1 post will be held at Stockport Infirmary, and the other at Stepping Hill Hospital, Stockport, and they may be either resident or non-resident. Both posts are recognised for the D.A. and F.F.A. R.C.S.

Stepping Hill Hospital, Stockport (491 Beds)

SENIOR HOUSE OFFICER (Assistant Resident Surgical Officer). The post is recognised for the F.R.C.S.

Stockport Infirmary, Stockport

HOUSE OFFICER (general surgery and ophthalmology). The post is approved for pre-registration purposes and recognised for the F.R.C.S. and D.O.M.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, 59B, Shaw-heath, Stockport, Cheshire, immediately.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (938 Beds.) Applications invited for HOUSE OFFICER (general surgery), 3 posts vacant shortly. Hospital recognised for F.R.C.S. Posts recognised for experience during pre-registration period.

Apply, with copy testimonials stating age, nationality and full details of previous service, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for SENIOR HOUSE OFFICER (orthopædics). Post recognised for F.R.C.S.

Apply, stating age and nationality, together with details of previous service, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for HOUSE OFFICER (general surgery) vacant shortly. Hospital recognised for F.R.C.S. examinations, and the post is recognised for experience during the pre-registration period.

Apply, with copy testimonials, stating age, nationality and full details of previous service, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (orthopædics) required, vacant now. Post recognised for F.R.C.S.

Applications, stating age and nationality, together with details of previous service, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

SULLY HOSPITAL, Sully, Penarth, Glamorgan. Major THORACIC CENTRE. (324 Beds.) CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICERS required immediately. Experience gained in treatment of all chest diseases.

Form of application immediately from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

SWANSEA. MOUNT PLEASANT HOSPITAL. Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics for the new Maternity Unit of 44 Beds which will be opened shortly at the above Hospital.

Applications, stating age, qualifications and experience, should be addressed to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

SWANSEA. MOUNT PLEASANT HOSPITAL. Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER for work in the Medical and Surgical Departments, and in the Chronic Sick Wards of the above Hospital.

Applications, stating age, experience, and qualifications, should be addressed to—

O. C. HOWELLS, Group Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN (recognised for Pre-registration Service) at the above Hospital.

Applications, with full particulars, should be sent to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (recognised for Pre-registration Service) at the above Hospital.

Applications, with full particulars, should be sent to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

SWANSEA. MORRISTON HOSPITAL. (500 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of SENIOR HOUSE OFFICER in the Traumatic and Orthopædic Surgical Department.

Applications, stating age, qualifications and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Group Secretary.

SWANSEA. MORRISTON HOSPITAL. (500 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of SENIOR HOUSE OFFICER in the Neurological and Neurosurgical Department.

Applications, stating age, qualifications and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Group Secretary.

SWINDON HOSPITAL GROUP. (536 Beds.) Applications are invited for the appointment of RESIDENT CASUALTY OFFICER (Senior House Officer grade) at Great Western Hospital, Swindon. Post recognised by R.C.S. for 6 months of years training under Fellowship regulations. Work of Accident and Orthopædic Department, associated with Wingfield-Morris Orthopædic Hospital, Oxford, includes large number of industrial injuries. Residential emoluments £120 p.a.

Full details, giving names of 2 referees, to Secretary, 7, Okus-road, Swindon, as soon as possible.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of HOUSE SURGEON (general surgery). This is a pre-registration post and is recognised for F.R.C.S., becoming vacant on 1st March, 1954.

Applications, stating age, qualifications with dates, nationality, and details of experience, together with 2 recent testimonials, should be sent immediately to the Secretary, Taunton Hospital Management Committee, Musgrove Park Hospital, Taunton.

TUNSTALL. BURSLEM, HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for HOUSE OFFICER (medical).

Apply, with copy testimonials and details of previous appointments held, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

TUNSTALL. BURSLEM, HAYWOOD AND TUNSTALL WAR MEMORIAL HOSPITAL. (96 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for SENIOR HOUSE OFFICER (surgical).

Apply, with copy testimonials and details of previous appointments held, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, as soon as possible.

VENTNOR, ISLE OF WIGHT. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST. (249 Beds.) SENIOR HOUSE OFFICER (resident) unmarried. Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, to Physician-Superintendent.

WINDSOR. KING EDWARD VII HOSPITAL. Applications are invited from General Practitioners for the post of Honorary CLINICAL ASSISTANT in General Medicine (1 session per week, Friday morning). Candidates are required to be Members of a Medical Protection Society.

Applications to Group Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor, by 20th February, 1954.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE PHYSICIAN to the Pædiatric Department, vacant 18th March. Preference will be given to applicants wishing to specialise in pædiatrics. The Department is recognised for the D.C.H.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under area orthopædic team. Appointment for 6 months in first instance. Vacant middle February.

Applications, with copies of 2 testimonials, to the Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-pregistration post, vacant immediately.

Applications, with copies of 2 testimonials, to the Secretary.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL THORACIC UNIT. Applications invited for the following appointment in the Leeds Regional Thoracic Centre (54 Beds) at Pinderfields General Hospital :—

SENIOR HOUSE SURGEON, salary £670 p.a., less a charge of £130 p.a. for board, lodging, &c., or

Locum SENIOR HOUSE SURGEON, salary £13 per week less a charge of £2 10s. a week for board, lodging, &c.

Address written applications, with full particulars and 2 names and addresses for reference, to—

W. E. EASTWOOD, Deputy Group Secretary,
Hospital Management Committee No. 10 Wakefield B Group.
Victoria Chambers, Wood-street, Wakefield.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Traumatic Surgery to serve the Cardiff Hospital Management Committee. The successful candidate will be based at St. David's Hospital, Cardiff, and may also be expected to serve in other hospitals in the Group. The post is resident and subject to review at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Pædiatrics at the Maelor General Hospital, Wrexham. The post may be either resident or non-resident and will be reviewed at the end of the first year.

Forms of application should be obtained from the Senior Administrative Medical Officer, Welsh Regional Hospital Board, Cathays Park, Cardiff, within 14 days of appearance of this advertisement.

WOLVERHAMPTON HOSPITAL MANAGEMENT COM-MITTEE GROUP NO. 16 BIRMINGHAM REGION. THE ROYAL HOSPITAL, WOLVERHAMPTON. (An Associated Hospital of the University of Birmingham Medical School.) Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER in Pathology at The Royal Hospital, Wolverhampton. Salary £700–£50 (6)–£1000 p.a. Resident or non-resident. Post vacant now.

Applications, naming 3 referees, should be addressed to—

W. COCKBURN, Secretary.
The Royal Hospital, Wolverhampton.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE GROUP NO. 16 BIRMINGHAM REGION.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

HOUSE OFFICER (Ear, Throat and Nose Department), vacant now.

New Cross Hospital, Wolverhampton

HOUSE OFFICER (general surgery), vacant now.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.
The Royal Hospital, Wolverhampton.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) WREXHAM, POWYS AND MAWDDACH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence immediately. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.). Salary will be at the rate of £350, £400, or £450 p.a., according to experience, less £100 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to—

WILLIAM JONES, Secretary, Wrexham,
Powys and Mawddach Hospital Management Committee.
Maelor General Hospital, Croesnewydd-road, Wrexham.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment, now vacant, of HOUSE PHYSICIAN (non pre-registration). The appointment is for 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications, and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment of HOUSE SURGEON (non pre-registration). The appointment will be for a period of 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

YORKSHIRE. EAST RIDING HOSPITAL MANAGE-MENT COMMITTEE.

Westwood Hospital, Beverley, Yorks (218 Beds)

(*a*) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer), vacant now. Recognised for F.R.C.S.

(*b*) HOUSE SURGEON (first, second, or third post), vacant now. Pre-registration post. Recognised for F.R.C.S. General surgical duties, some orthopædics.

Broadgate (Mental) Hospital, Beverley, Yorks (650 Beds)

(*c*) HOUSE PHYSICIAN (first, second, or third post), vacant now.

Salary for (*a*) is £670 p.a., less £140 board, lodging; for (*b*) and (*c*) £350–£450, less £100 board, lodging. Fully qualified practitioners also invited to apply for pre-registration post.

Detailed applications to Secretary, Westwood Hospital, Beverley, Yorks.

WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL, WATFORD, HERTS. (198 Beds.) Applications are invited from registered medical practitioners for the post of HOUSE SURGEON, recognised for pre-registration. Post vacant in March. Salary according to National Health Service scale.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, should be sent to—
CYRIL HOPKINSON, Administrator.

WARWICK HOSPITAL. Applications are invited for the resident appointment of PÆDIATRIC HOUSE OFFICER (Male or Female), vacant 15th March. 30-Bedded Pædiatric Unit. The post is recognised for D.C.H. and pre-registration.

Applications, with 2 recent testimonials, to the Medical Superintendent, Warwick Hospital, Lakin-road, Warwick.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE.

York. County Hospital, City Hospital, and Military Hospital (Civilian Wing) (General Hospitals of 269, 265, and 60 Beds respectively with full Consultant staff)

SENIOR HOUSE OFFICER in Anæsthetics, resident or non-resident as from 15th February. Post recognised for D.A., application made for recognition for F.F.A.R.C.S. Salary £670, residence available at a charge of £153. Previous experience in anæsthetics desirable but not essential.

York. Maternity Hospital (44 Beds)

Required, RESIDENT SENIOR OBSTETRIC HOUSE SURGEON for 1 year as from 1st March. Post recognised for M.R.C.O.G. Salary £670 p.a., less £153 for residence.

Applications, giving age, nationality, qualifications, experience, and names of 2 referees, immediately to the Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

BRITISH WEST INDIES. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. HOUSE OFFICERS. Appointments available in May and June, 1954, for a minimum of 1 year from commencement of duty. Duties include approximately 6 months in each of 2 Departments—Medicine, Surgery, Obstetrics and Gynæcology, Anæsthetics or Medical and/or Surgical Casualty (the latter offering unusual variety and interest). Salary for fully qualified Medical Officers £450 p.a., less £100 for board and residence. Some posts are approved for first and second pre-registration appointments—salaries as in U.K. Single accommodation only. Return first-class passage by sea will be paid. This is a general teaching hospital of 300 Beds approved by London University.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 testimonials, to the Manager and Secretary, University College Hospital, Mona, Jamaica, B.W.I., before 7th March, 1954. Further information on request.

CHANNEL ISLANDS, JERSEY. GENERAL HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER at the above Hospital. Previous experience is essential. The Hospital has 200 Beds and is recognised as a training hospital for the F.R.C.S. Post is vacant on 1st April, 1954. The appointment is for 6 months in the first instance, but is renewable for a further 6 months. Salary £700 p.a., less £100 for residential emoluments.

Applications to be submitted not later than 20th February, 1954, to the President, Public Health Committee, General Hospital, Jersey, C.I.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. INTERNSHIPS and RESIDENCIES available in 700-Bed general, private Albany Hospital, directly connected with Albany Medical College. Approved for all major specialties. Participating in Exchange-Visitor Program. Salary range $1320–$2220 annually in addition to laundry, uniforms and room. All appointments being 1st July, 1954.

For further information apply to Medical Director.

NEW YORK. NEW ROCHELLE HOSPITAL, New ROCHELLE, NEW YORK, U.S.A. (360-Bed general community hospital.) Approved by American College of Surgeons and American Medical Association for Internship and Residency Training. Only graduates from approved university schools accepted. Term of Internship: 1st July, 1954–30th June, 1955. INTERNES—$100 per month plus full maintenance. Return passage to England paid by Hospital after completion of internship.

Apply Superintendent.

ST. JOHN'S NEWFOUNDLAND. GENERAL HOSPITAL. (475 Beds.) **NEWFOUNDLAND PROVINCIAL DEPARTMENT OF HEALTH.** INTERNES. Applications are invited from registered and provisionally registered medical practitioners for the above posts. Salary $2500 p.a., less $480 for maintenance, &c. Transportation to St. John's will be paid by the Department of Health and on completion of 12 months service, return fare to the United Kingdom. The Hospital is recognised by the Royal Colleges of Canada and is fully accredited by the Joint Commission of the United States of America and Canada on hospital accreditation.

Applications, with full details as to age, &c., should be sent as soon as possible to Dr. E. WILSON, Superintendent.
General Hospital, St. John's, Newfoundland.

Public Appointments

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER. Applications are invited from registered medical practitioners for this whole-time superannuable post. Salary £950 p.a. by annual increments of £50–£1300 p.a., plus a car allowance.

Application forms are obtainable from Dr. J. B. S. MORGAN, County Medical Officer, County Offices, St. Mary's Gate, Derby, to whom they should be returned by 17th February.

HER MAJESTY'S COLONIAL RESEARCH SERVICE. EAST AFRICA HIGH COMMISSION. Applications are invited from Male candidates for appointment to undertake duties in the East African Veterinary Research Organization. The officers will be stationed at the new Headquarters at Muguga, Kenya Colony, which has a healthy temperate climate and is situated half an hour from Nairobi and the many amenities which the city provides. The Organization undertakes long-range research into major problems in animal disease, animal health and animal industry affecting the East African region, and will produce vaccines for 2 principal diseases, rinderpest and bovine pleuropneumonia. For these purposes large modern and well-equipped laboratories and ancillary facilities providing exceptional opportunities for research have recently been established at Muguga. The posts and duties are as follows:—

VETERINARY RESEARCH OFFICER (Senior Bacteriologist) to take charge of the Bacterial Diseases Division and to undertake research on East African bacterial diseases of livestock and bacteriological problems relating to animal diseases; to supervise research and technical staff engaged on bacteriological research and vaccine preparation. Candidates must possess a veterinary degree or diploma registrable in the United Kingdom and have had considerable experience of research in bacteriology. Possession of a postgraduate Degree or Diploma in Bacteriology would be an advantage. Appointment would be to the Principal Scientific Officer grade.

VETERINARY RESEARCH OFFICER (Bacteriologist) to undertake research into contagious bovine pleuro-pneumonia, including immunity and immunisation and to take part in and supervise the production of pleuro-pneumonia vaccine.

VETERINARY RESEARCH OFFICER (Virologist), 2 vacancies, to undertake research into virus diseases of livestock, to concentrate for some time to come on rinderpest and the virus of rinderpest, including immunity and immunisation, and to take part in and supervise the production of rinderpest vaccine.

VETERINARY RESEARCH OFFICER (Protozoologist) to undertake research into Tick-borne Protozoal diseases of livestock, particularly bovine theileriasis.

Candidates for the posts of Bacteriologist, Virologist, and Protozoologist must possess a Veterinary Degree or Diploma registrable in the United Kingdom. Possession of a University Degree in Science would be an advantage. Arrangements may be made for a period of postgraduate training in the United Kingdom, if necessary. Appointment would be to the Senior Scientific Officer or Scientific Officer grade; for appointment to the Senior grade a candidate must have had at least 3 years approved postgraduate experience and be not less than 26 years of age.

RESEARCH OFFICER (Animal Physiologist) to undertake research into the physiology of African livestock. Major problems requiring investigation are: (*a*) the adaptation of domestic animals to climatic environments; and (*b*) ruminant digestion in indigenous stocks. The officer will work in 1 of these fields. Candidates should have a good Honours Degree in Science and have had 2 years postgraduate training or experience in physiology research. Possession of a postgraduate degree would be an advantage. Arrangements may be made for a period of postgraduate training in the United Kingdom if necessary. Appointment would be to the Senior Scientific Officer or Scientific Officer grade; for appointment to the Senior grade a candidate must have had at least 3 years approved postgraduate experience and be not less than 26 years of age.

Total emoluments, consisting of salary, overseas research allowance, and variable cost-of-living allowance, are in the following ranges:—

Veterinary Research Officers:
Principal Scientific Officer—£1700–£1900 a year.
Senior Scientific Officer—£1490–£1670 a year.
Scientific Officer—£979–£1390 a year.

Research Officer (Animal Physiologist):
Senior Scientific Officer—£1195–£1520 a year.
Scientific Officer—£675–£1066 a year.

Point of entry into the scales depends upon age, qualifications, and experience. Government quarters are provided at rental of 10% of basic salary. Outfit allowance £60. Free passages in both directions are provided for Officer, wife, and children under 13 years of age. Superannuation is provided under the Colonial Superannuation Scheme.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE. 67/187/02).

MINISTRY OF LABOUR AND NATIONAL SERVICE. Registered medical practitioners for part-time employment as MEDICAL OFFICER at Government Training Centre and Industrial Rehabilitation Unit, Stafford-road, Waddon, near Croydon. Duties include general medical supervision of persons undergoing courses of vocational training or industrial rehabilitation, including supervision of first-aid arrangements, &c. Attendance required up to 6 sessions a week depending on number of persons undergoing training or rehabilitation. Fees vary from £1 for session of up to ½ an hour to £2 15s. for maximum session of 2½ hours not exceeding 3 hours. Mileage allowance payable in certain circumstances. Preference given to candidates with experience in industrial medicine and rehabilitation; attention is drawn to exceptional opportunities which this appointment offers for experience and research in this field.

Write in duplicate stating age, full details of qualifications and experience, with dates and periods of service (if any) with Forces, to E.C. Appointments Officer, Ministry of Labour and National Service, 1–6, Tavistock-square, W.C.1, by 15th February, 1954. No original testimonials should be sent. Only candidates selected for interview will be advised.

NORTHAMPTON COUNTY BOROUGH. Assistant MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Salary £950–£50–£1300.

Particulars of the above appointment and form of application to be returned by 24th February, may be obtained from the Medical Officer of Health, 7A, St. Giles'-square, Northampton.
C. E. VIVIAN ROWE, Town Clerk.

CORNWALL. COUNTY OF CORNWALL. Applications are invited from registered medical practitioners holding the Diploma in Public Health or its equivalent, for the mixed appointment of MEDICAL OFFICER on the staff of the County Council, SCHOOL MEDICAL OFFICER, and MEDICAL OFFICER OF HEALTH for the undermentioned Area :—

Area VI.—Comprising :
Launceston Borough.
Bude-Stratton Urban District.
Camelford Rural District.
Launceston Rural District.
Stratton Rural District.

The salary for the mixed appointment will be on a scale of £1510 10s. 2d.–£1703 16s. 10d., which scale is in accordance with the formulæ of the Medical Whitley Council. The appointment is pensionable and the successful candidate will be required to pass a medical examination.

Further particulars may be obtained from the County Medical Officer, County Hall, Truro, to whom applications, together with 1 testimonial and the names of 2 persons to whom reference may be made, should be addressed, not later than 20th February, 1954. E. T. VERGER, Clerk of the County Council.

County Hall, Truro.

DURHAM. COUNTY COUNCIL OF DURHAM. Health DEPARTMENT. Applications are invited from registered medical practitioners (Female) for the post of ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER at a commencing salary of £950 p.a., rising by annual increments of £50 to £1300 p.a. Travelling expenses will be paid in accordance with a scale approved by the Whitley Council. Canvassing directly or indirectly will disqualify.

The appointment is subject to certain conditions, particulars of which may be obtained from the County Medical Officer of Health, Shire Hall, Durham, to whom applications, together with the names of not more than 3 referees, should be returned not later than 20th February, 1954.

J. K. HOPE, Clerk of the County Council.

Shire Hall, Durham, 20th January, 1954.

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 8, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
NEWTON ABBOT ..	DEVON ..	20TH FEBRUARY, 1954

KENT EDUCATION COMMITTEE require Assistant COUNTY MEDICAL OFFICER in North East Kent. Salary within scale £950–£50–£1300. Post superannuable. Duties mainly in School Health and Child Welfare Services. Experience in classification of educationally subnormal children an advantage.

Applications, stating age, qualifications, experience, and names of 2 persons to whom reference may be made as to professional ability and character, to Principal School Medical Officer, County Hall, Maidstone, by 18th February, 1954.

LANCASHIRE COUNTY COUNCIL. Registered medical practitioners required for appointment of ASSISTANT DIVISIONAL MEDICAL OFFICERS in areas adjacent to Bolton/Bury, Manchester, and Wigan. Possession of D.P.H. desirable. Salary £950–£50–£1300 p.a. Travelling and subsistence allowances where applicable. Posts superannuable and subject to medical examination.

Application forms and further particulars obtainable from County Medical Officer, East Cliff County Offices, Preston.

THURSDAY ISLAND. Qualified medical practitioners are invited to apply for position of TUBERCULOSIS OFFICER, Thursday Island. Appointee will be in charge of tuberculous patients in Public Hospital and 45-Bed Native Sanatorium at Thursday Island and will also survey Torres Strait Islands and Gulf of Carpentaria Mission Stations in Queensland, including B.C.G. vaccinations and X-ray surveys. Appointee must be prepared to travel by air and in small boats. Salary range—£1725–£1975 plus €16 extra cost-of-living allowance and £75 district allowance p.a. and free board, lodging and laundry, or allowance in lieu. Commencing salary within range will depend on qualifications and previous experience of appointee.

Applications, stating age, qualifications, experience, testimonials and date when able to commence duties, close with Under Secretary, Department of Health and Home Affairs, Brisbane, Queensland, from whom further particulars may be obtained, on 31st March, 1954.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age. The places for which applications are invited are as follows :—

ENGLAND AND WALES

Lostwithiel (Bodmin).
Sowerby Bridge, Luddendenfoot, Ripponden and Barkisland (Halifax).
Upper Holloway, N.19 (London).
Ludlow, Brimfield and Stanton Lacy (Ludlow).
Porlock (Minehead).

General Practice

For an Executive Council post (England and Wales) apply on form E C.16A obtainable from the council. Mark envelope "Vacancy."

STROUD GREEN (HORNSEY). Applications invited for VACANCY. List at present approximately 2400. Residence and surgery may be available. Apply on E.C.16A before 13th February, 1954, to—

F. J. ASHFORD, Middlesex Executive Council.
Gloucester House, Gloucester-gate, London, N.W.1.

DUMFRIESSHIRE EXECUTIVE COUNCIL. National HEALTH SERVICE. Applications are invited for succession to the medical practice of the late Dr. J. T. McGlasson, Canonbie. The practice is rural and successor will be required to dispense. On list 1635 persons in Dumfriesshire and 868 persons in 2 adjoining counties. Further particulars may be obtained from the undersigned, with whom applications, by letter, stating age, qualifications and experience, together with the names of 3 referees, should be lodged by 20th February, 1954.

35, Castle-street, Dumfries. WILLIAM DODDS, Clerk.

Hospital Services : Non-Medical Appointment

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the appointment of a BIOCHEMIST (Basic grade, Whitley Council scale) at the General Hospital. Candidates should possess a B.Sc. degree with honours in Biochemistry or Chemistry (or an equivalent qualification).

Applications, with the names of 2 referees, should be sent to the House Governor, The General Hospital, Birmingham, 4, within 3 weeks of the publication of this advertisement.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

Medical Officer required for whaling station at South Georgia leaving mid-February returning May, 1955. Age preferably over 30, some surgical experience essential. Salary £100 per month all found. Applications, giving details of age, qualifications and experience, with copies of 3 recent testimonials and names of 3 referees, to be sent forthwith to : CHR. SALVESEN & Co., 29, Bernard-street, Leith.

Medical Director or Assistant Director wanted for modern institution caring for nervous and mental diseases in beautiful country setting in New Jersey, U.S.A., offering Christian care to those with mental diseases. Applications invited from general practitioners or psychiatrists. House available. Salary good. —Address, No. 897, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Consulting-rooms, full and part time, and Houses in the medical area.—ELGOOD & Co., 1, Bentinck-street, W.1 (WELbeck 8974).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to : WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (Telephone : MUSeum 5386–7).

Austin A30, A40, and A70 range—new Ford Popular and all Show Models. Limited number of orders now acceptable from proven essential users.—Application form, brochures, easy terms, from : H. A. SAUNDERS LTD., 140/144, Golders Green-road, London, N.W.11.

Touring. Doctor's 4-berth equipped caravan available hire from York. 12 guineas weekly.—Address, No. 896, THE LANCET Office, 7, Adam-street, Adelphi, London W.C.2.

Merlin, self-propelling, invalid chair. Leg rest extends full length. 3 velvet cushions. In use 1 week—as new £18, cost £25 new.—Mrs. E. SMITH, 27, Glenleigh Park-road, Bexhill, Sussex.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Hebridean Cruises, 12 and 14-day Cruises by 86-ton Motor Yacht to Scotland's Western Isles and Lochs. Inclusive fare from 33 and 38 guineas. 8-day Cruises (May only) from 17 guineas.—Details from BLUE WATER CRUISES LTD., Dept. L., 68, Gordon-street, Glasgow.

Harger Drunkometer wanted to buy.—Wyke House, Isleworth, Middlesex.

ARTHUR SHAW

Medical Agent and Insurance Consultant

PREMIER BUILDINGS, 88, CHURCH STREET, LIVERPOOL, 1

Telephone : Royal 8116 Telegrams : "Organic," Liverpool

Vacancies occur for assistants, Ships' Surgeons, hospital and G.P. locums, appointments abroad.

All classes of Insurance transacted *with Special Rebates* on Life and Endowment, House Purchase and Sickness Policies, etc.

SUBSTANTIAL ADVANCES for HOUSE PURCHASE, Cars, etc., arranged.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, February 6, 1954.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

Consider Abbott's New Oral Antibiotic

ERYTHROCIN *

Because . . . it is orally effective against infections caused by staphylococci, streptococci and pneumococci — also especially indicated when patients are allergic to other antibiotics or when the organism is resistant.

Because . . . the special acid resistant coating assures absorption in upper intestinal tract. Built-in disintegrator gives effective dispersal.

Because . . . of low toxicity; little effect on normal intestinal flora; gastro-intestinal disturbances rare; no serious side-effects reported.

Erythrocin . . . is indicated in pharyngitis, tonsillitis, scarlet fever, pneumonia, erysipelas, osteomyelitis, pyoderma and other conditions.

*TRADE MARK FOR ERYTHROMYCIN, ABBOTT, *CRYSTALLINE*

***supplies** of **Erythrocin** are now generally available to the medical profession, in bottles of 25 and 100 0.1 gm. tablets.*

ABBOTT LABORATORIES LTD PERIVALE GREENFORD MIDDLESEX

Abbott

NEW- Nasal spray with NEOPHRYN

This powerful but non-irritant decongestant is now available as a spray to provide symptomatic relief whenever nasal congestion occurs. The new spray can easily be carried in the pocket or handbag, and has been precision engineered with a micro-jet tip to give an adequate dose of 'Neophryn' in a fine even spray.

Basic N.H.S. cost—2/4d.

NEOPHRYN

Trade Mark

Manufactured in England by

BAYER **PRODUCTS LTD., Africa House, Kingsway, London, W.C.2**

Associated export company: WINTHROP PRODUCTS LIMITED, LONDON